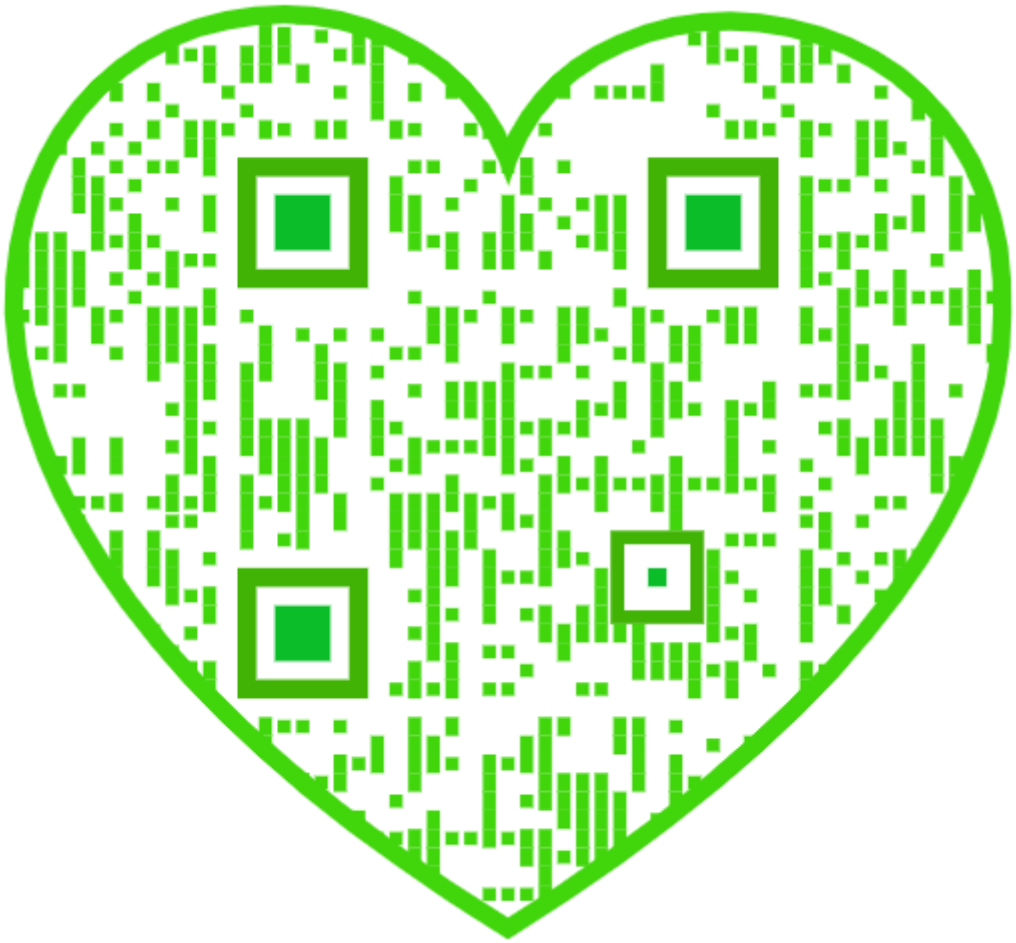

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Vol. XXVI. No. 1

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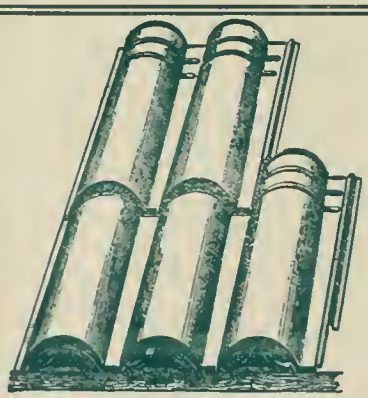

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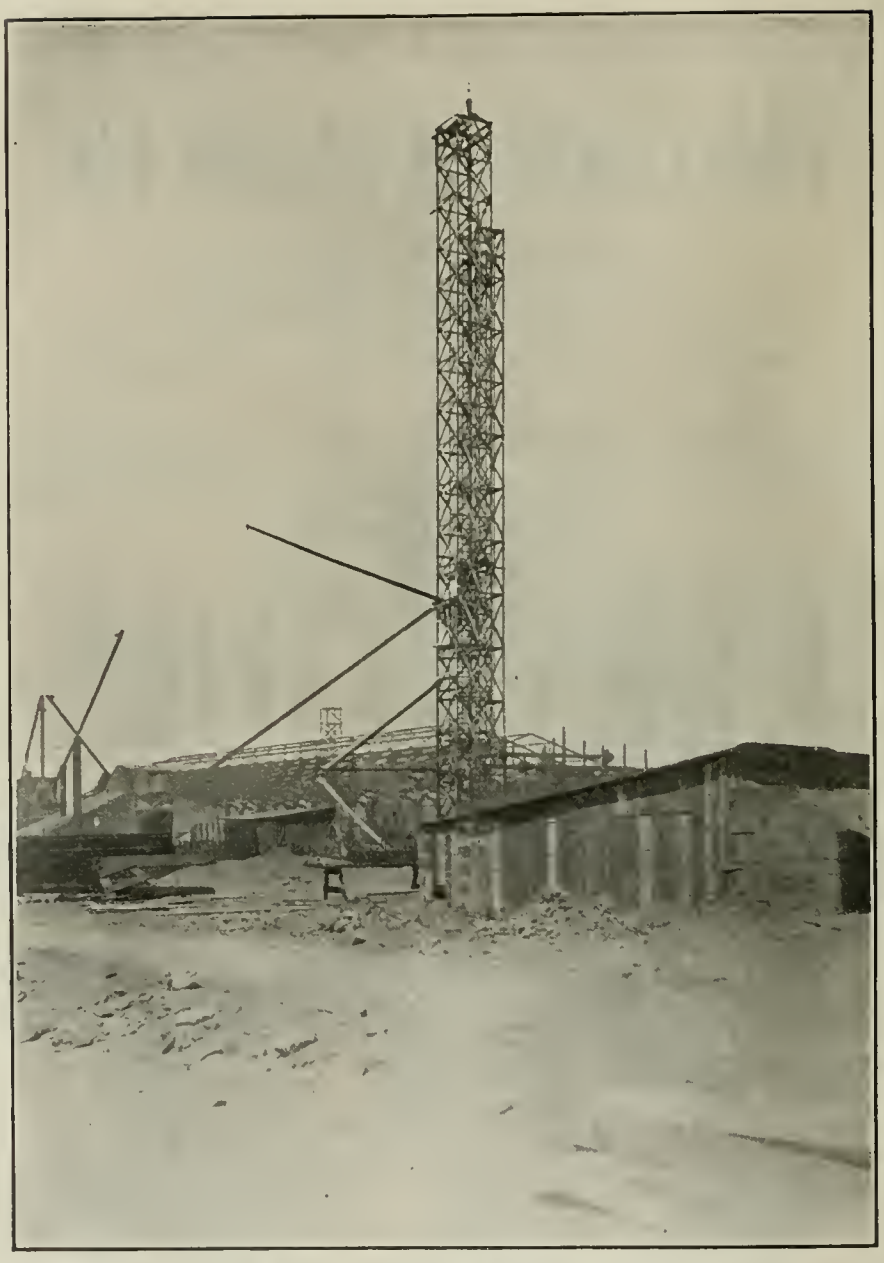

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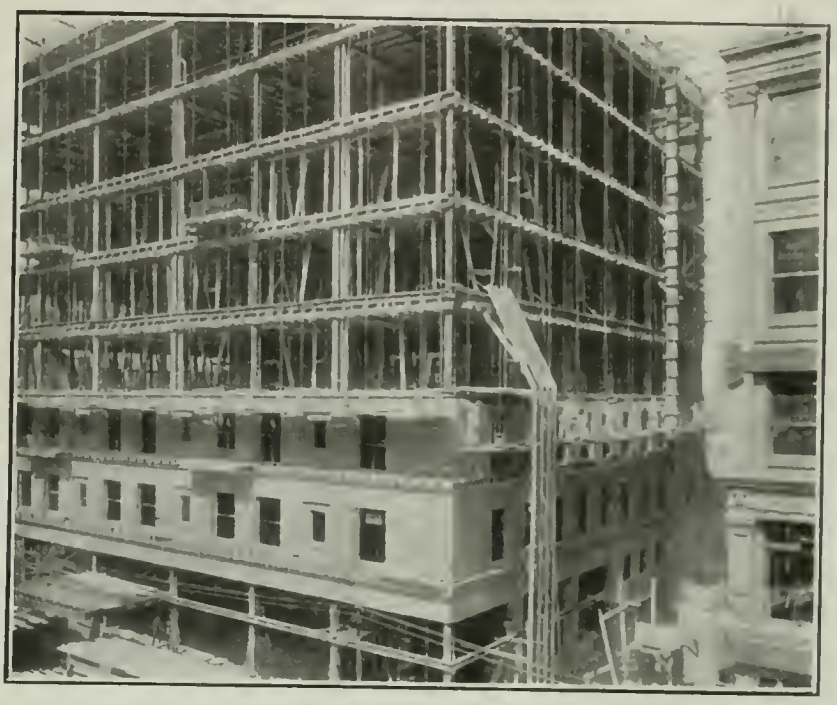

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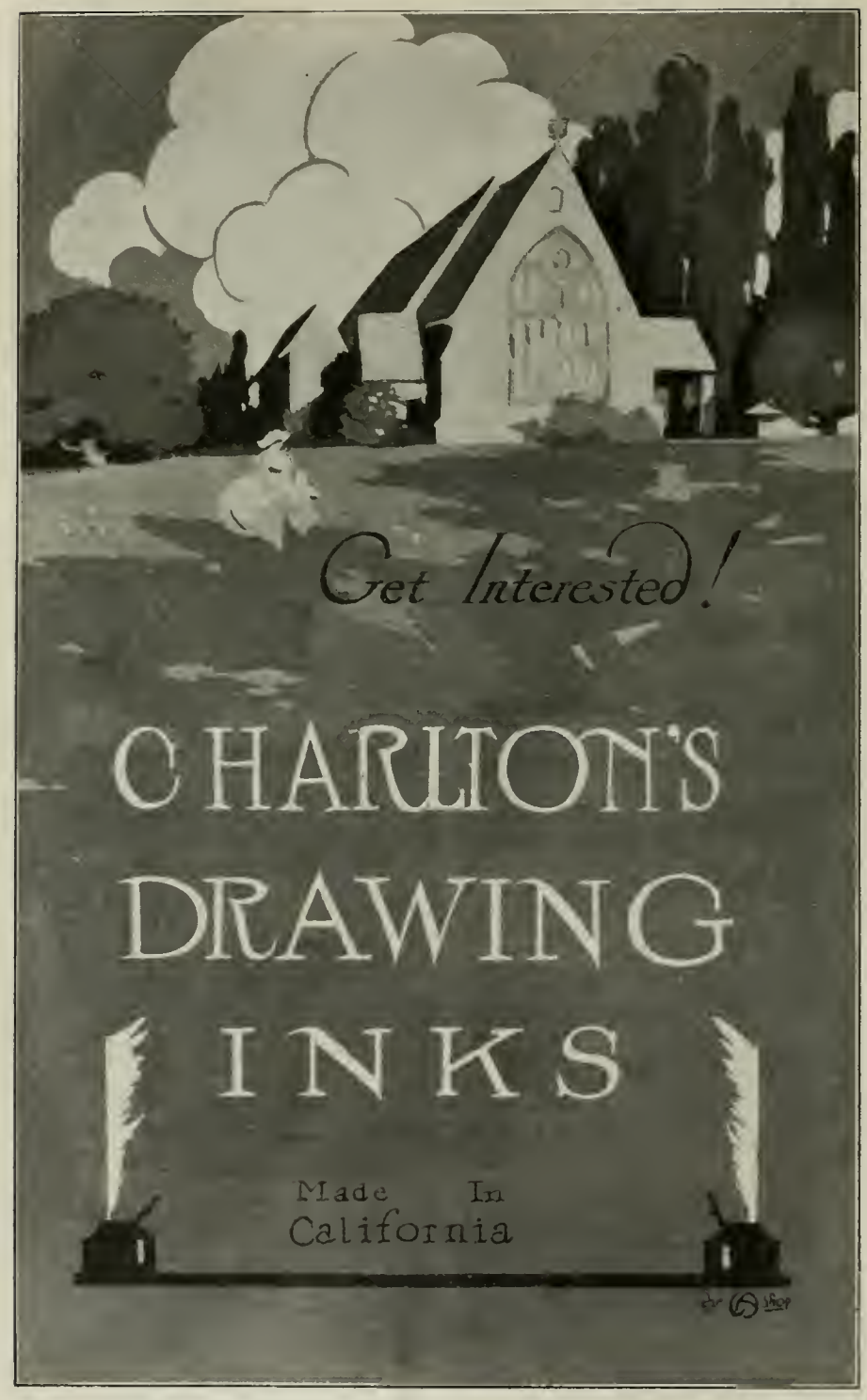
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(For Index to Advertisements, see page 121)

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- Pacific Portland Cement Co., Pacific Bldg., S. F.
- Standard Portland Cement Co., and Santa Cruz Portland Cement Co...Crocker Bldg., S. F.
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- Boyd & Moore.....356 Market St., S. F.
- Petrifax Cement Coating, sold in San Francisco by Sherman Kimball, 503 Market St.

CEMENT EXTERIOR FINISH
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- Dexter Bros. Company, represented by Sherman Kimball, Hooker & Lent Bldg. (503 Market St.), San Francisco.
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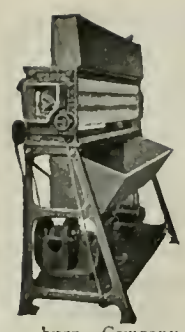

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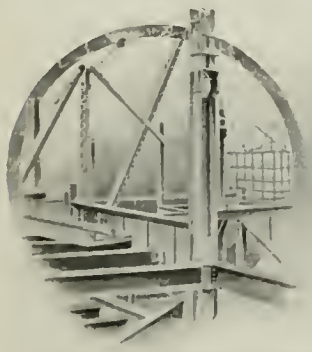

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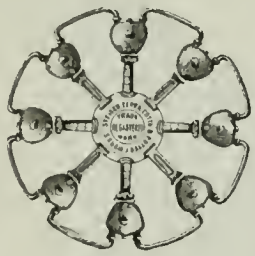

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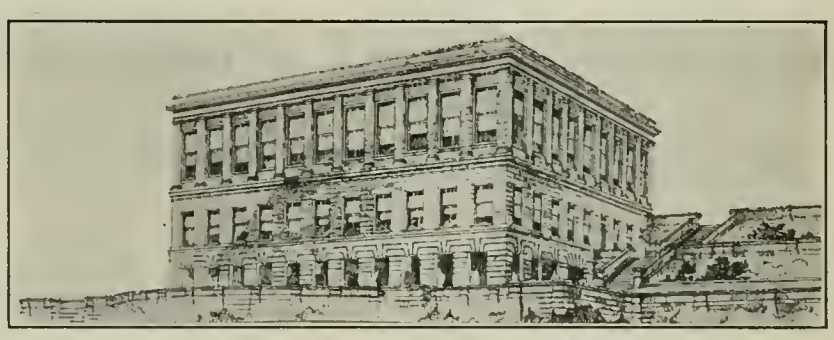

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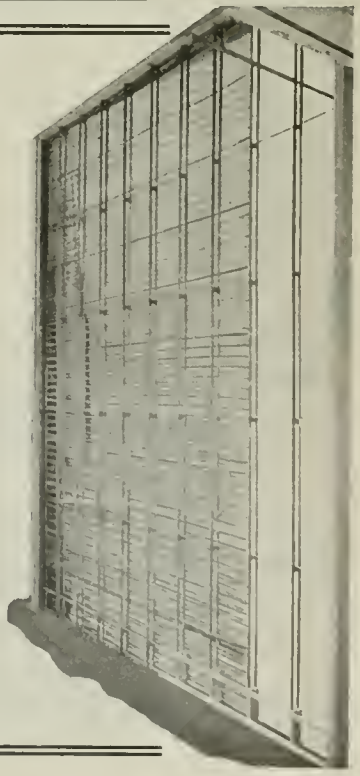

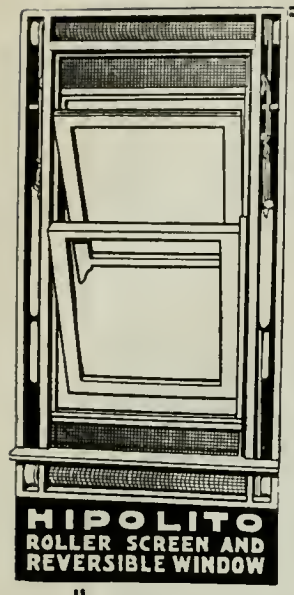

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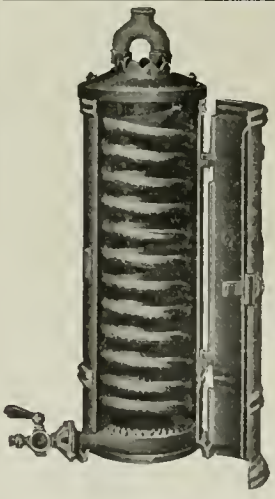

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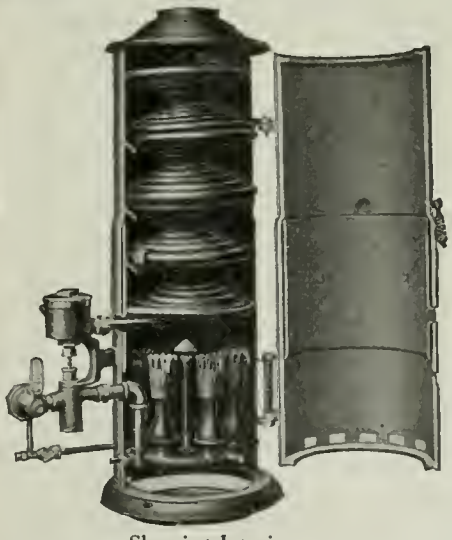

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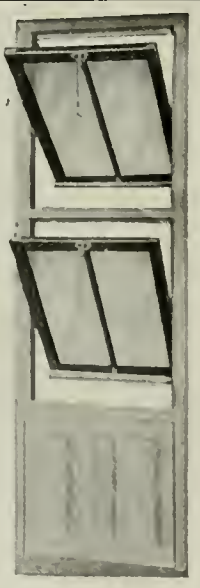

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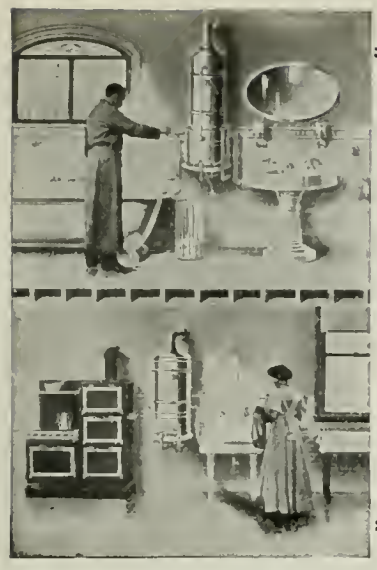

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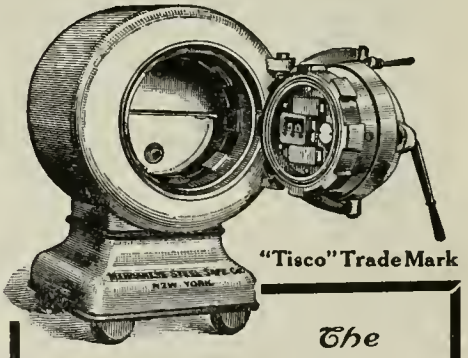

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NOW, THEREFORE, we do strictly command and enjoin you, the said ASBESTOS SHINGLE, SLATE & SHEATHING COMPANY, from in any way advertising in words or in substance that this court has held that any cement shingles hitherto made and sold by the defendant H. W. Johns-Manville Company, infringe on any of the claims of the patent in said suit, or from issuing any circulars or in any other way publishing abroad or saying, or writing, that this court has held that no cement shingles can be purchased except from the complainant, or that all the claims of the complainant were upheld by the interlocutory decree herein, or in any other way misstating the effect of the said decree, or of publishing the whole or any part thereof or the substance of the same, so that it shall mislead any reader as to its meaning or effect, and

We do further strictly command and enjoin you, the said ASBESTOS SHINGLE, SLATE & SHEATHING COMPANY, that whenever you shall advertise the interlocutory decree of this court entered in said suit, or any part thereof, or the substance of same, in connection with the words "cement shingles" or "asbestos shingles" or the like, that in every such case the said advertisement or circular or other means of publication shall make equally salient to the eye the fact in substance that the said decree of this court forbad the making, vending or using of cement or asbestos shingles or the like, *made upon a paper-making machine*, and that said advertisement shall nowhere contain any statement that the decree of this court forbad the making, vending or using of any cement or asbestos shingles unless such statement be accompanied as aforesaid with the statement in substance that the said shingles so forbidden are those made upon a paper-making machine.

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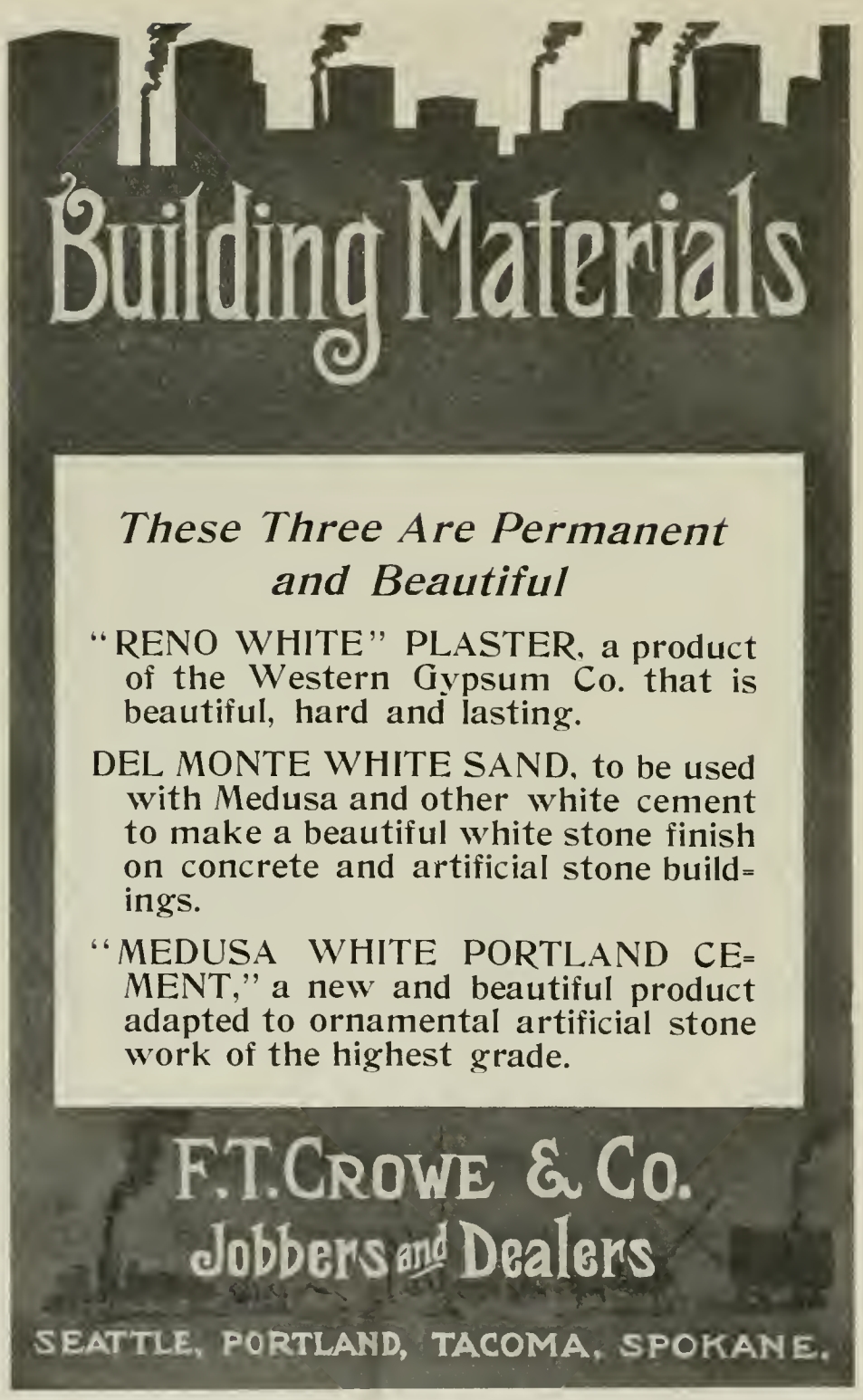
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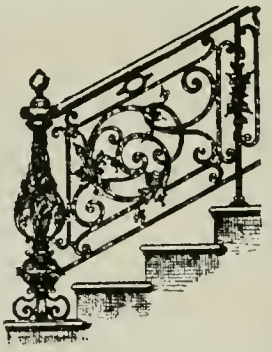

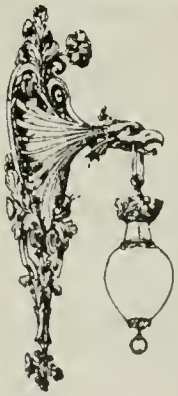

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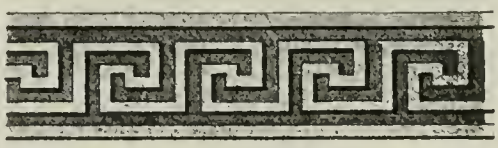

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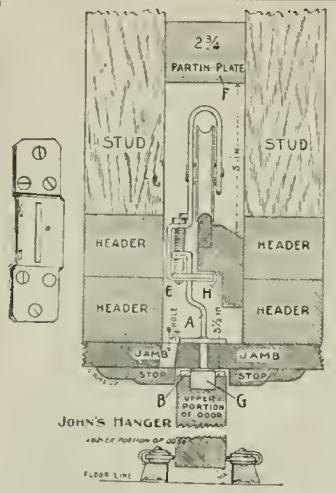

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Architect and Engineer

Of California

Pacific Coast States

VOL. XXVI. AUGUST, 1911. No. 1.

Exchange Building at San Bernardino, California

Some Recent Examples of Telephone Building Construction on the Pacific Coast

By E. V. COBBY

THE accompanying photographs show some of the recent buildings erected by The Pacific Telephone and Telegraph Company throughout its Coast territory, and close study of these buildings will give an idea of the varied conditions that must be met in telephone building construction work.

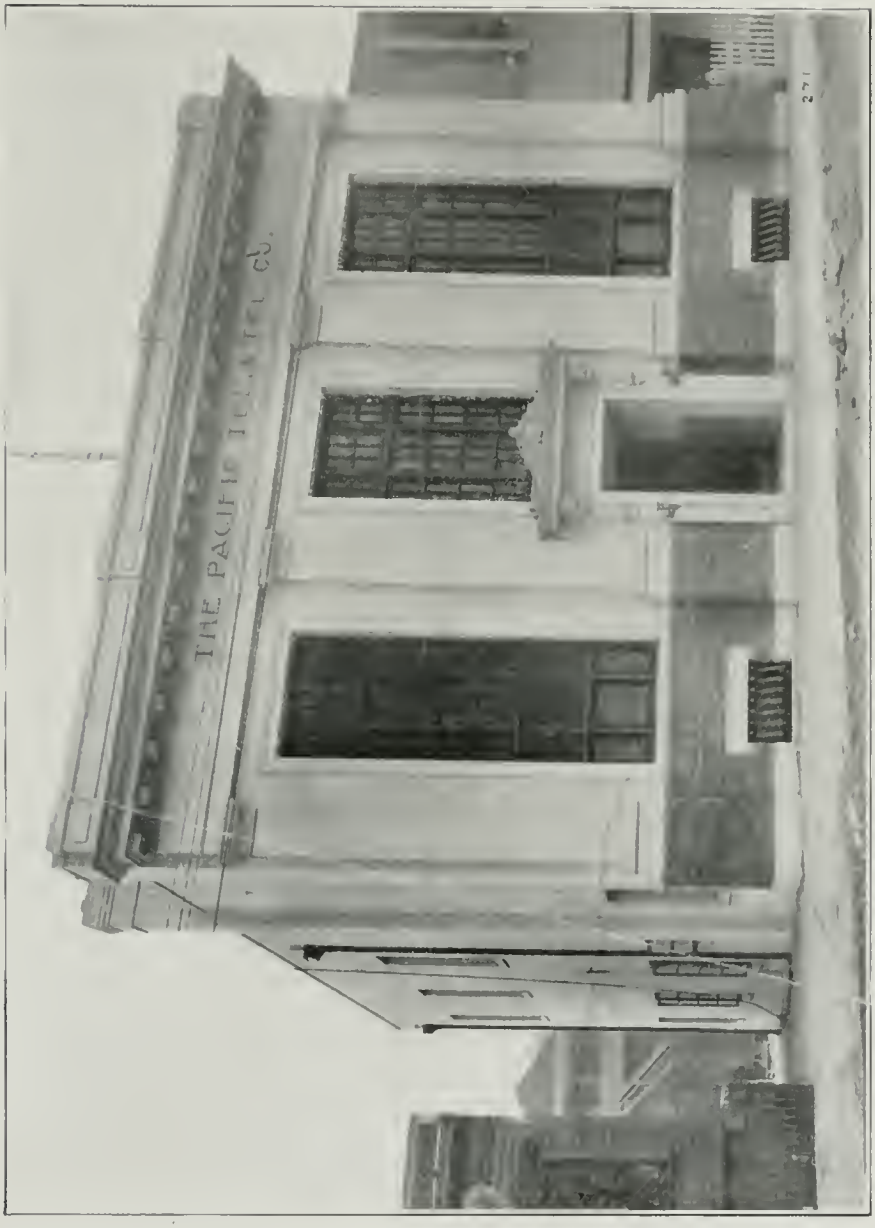
Some of the most important problems in their engineering, requiring considerable study, are to provide buildings which will admit of a convenient, economical and satisfactory arrangement of the switchboards, apparatus, cable and other essential parts of the equipment; also, to so construct the building

Telephone Building, San Jose

that, should additions be required, they can be made and additional space provided without inconvenience to the employees or injury to the original design. It is also important in a building of this class to provide adequate ventilation, heat and light for the comfort and well-being of the employees.

It is not the thought in this class of building work to erect a structure as an architectural monument. In general, the use of elaborate ornamentation is avoided, although in some cases it is the endeavor to design a building that will harmonize architecturally with its surroundings. This point is best brought out in the design of the Chinese Exchange building in San Francisco, which is located in the heart of Chinatown, and again in the Riverside building at Riverside, California, which is located in close proximity to the celebrated Glenwood Hotel and other structures in that city that represent some of the best examples of Mission architecture in California.

The buildings are all constructed for future growth, and in preparing plans a study covering a period of twenty years is made, the building being first erected to handle the growth of about seven years before additions are made.



Pacific Telephone and Telegraph Company's Office Building, San Francisco, California

Interior of Chinatown Telephone Exchange, San Francisco, California

Exchange in Southern California

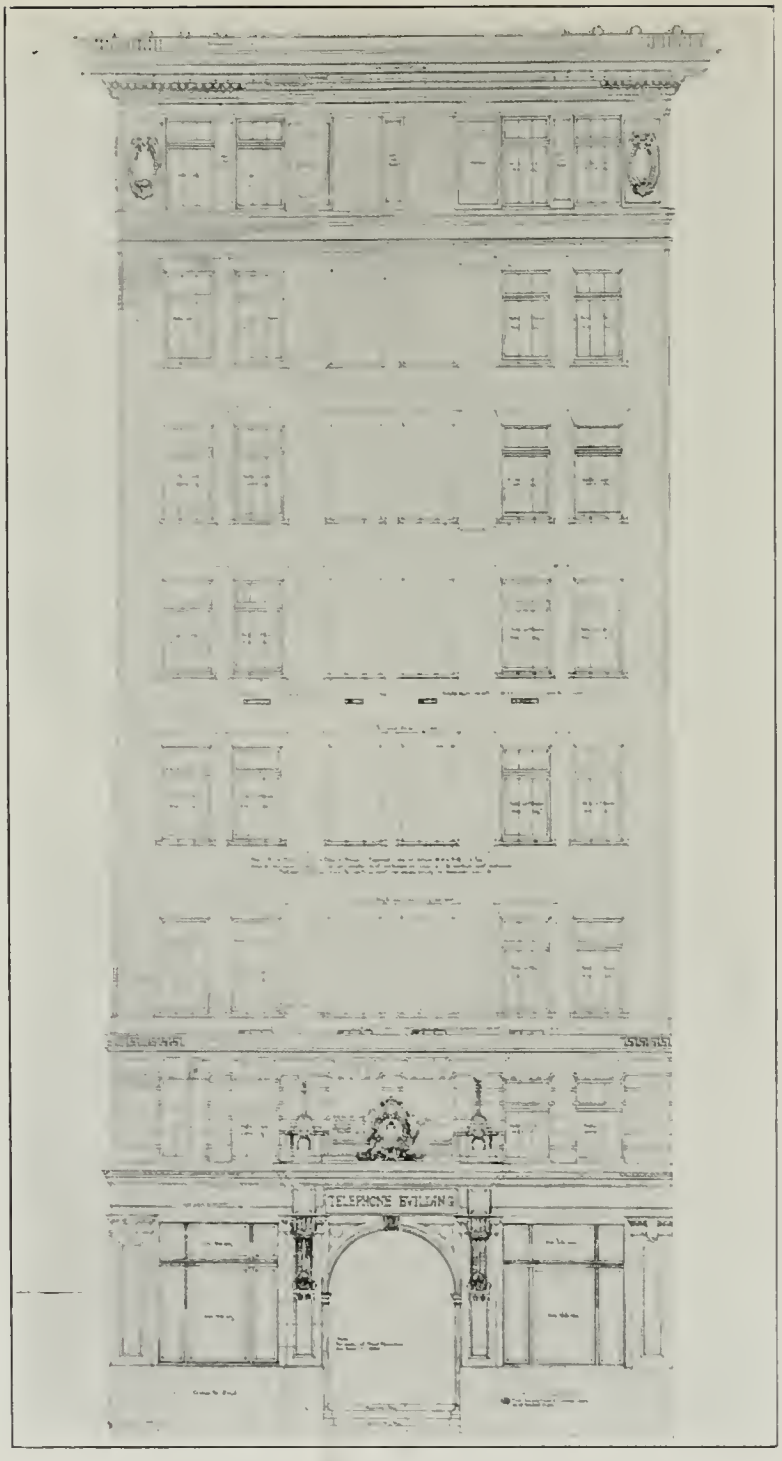
The Chinatown Exchange building, as already stated, is strictly in conformity with its environment, its gayly decorated pagoda roof and balconies making it an example of Chinese architecture seldom seen outside of the Chinese Empire.

The concrete foundation walls of the building represent the stone platform upon which Chinese buildings are invariably placed to protect them from dampness. The columns supporting the first pagoda consist of plain circular posts with molded base and without capitals of any kind. This feature in Chinese architecture differs from most others, as the capital generally is one of the most important architectural adornments.

The pagodas or towers are receding stories with gayly colored roofs turned up sharply and highly ornamented. This shape is supposed to shelter the building from the direct rays of the sun and throw the rain water free of the building. In China the roof is the principal ornament of the building, it being considered a sign of dignity to possess several roofs, one over the other. The window lights are of colored glass in imitation of the lining of oyster shells, which are used for lighting purposes in China. This shell lining is translucent and admits an effective but subdued light.

The telephone equipment is of the most modern type. As the district covered by Chinatown is a restricted one, the telephone lines are consequently short, therefore there are very few party lines, and as the Chinese are naturally secretive, party line service is not popular with them. The exchange is operated

Exchange Building, Santa Cruz



Front Elevation New Telephone Building, Under Construction at Spokane, Washington

Exchange Building, Riverside, California

by quaintly dressed Chinese maidens under the direction of a Chinese manager. These young ladies, assisted by a chief operator, have become very proficient in the manipulation of the switchboard, and maintain a high grade of service.

The visitor on entering finds a reception hall the full width of the building with carved settees at each end. Entering the main room may be seen Chinese carved grill work surrounding the public booth and enclosing the manager's office and pay attendant's position.

The ceiling is elaborately frescoed with dragons and Chinese designs in colors, which would seem to us to be at riot with each other, but which are strictly in conformity with the Chinese conception of art.

The interior wood work of the building is finished in black ebony and gold. An attractive torri at the end of the room forms a suitable setting for the carved switchboard, which can be seen through it with its force of native operators.

The use of reinforced concrete in two and three-story buildings has been found very satisfactory, as this material affords a structure that is practically indestructible, and is less expensive than a strictly class A building. Los Angeles has two reinforced concrete buildings; San Jose a combination steel frame and concrete, and Bakersfield is about to have a concrete structure.

A Suburban Exchange

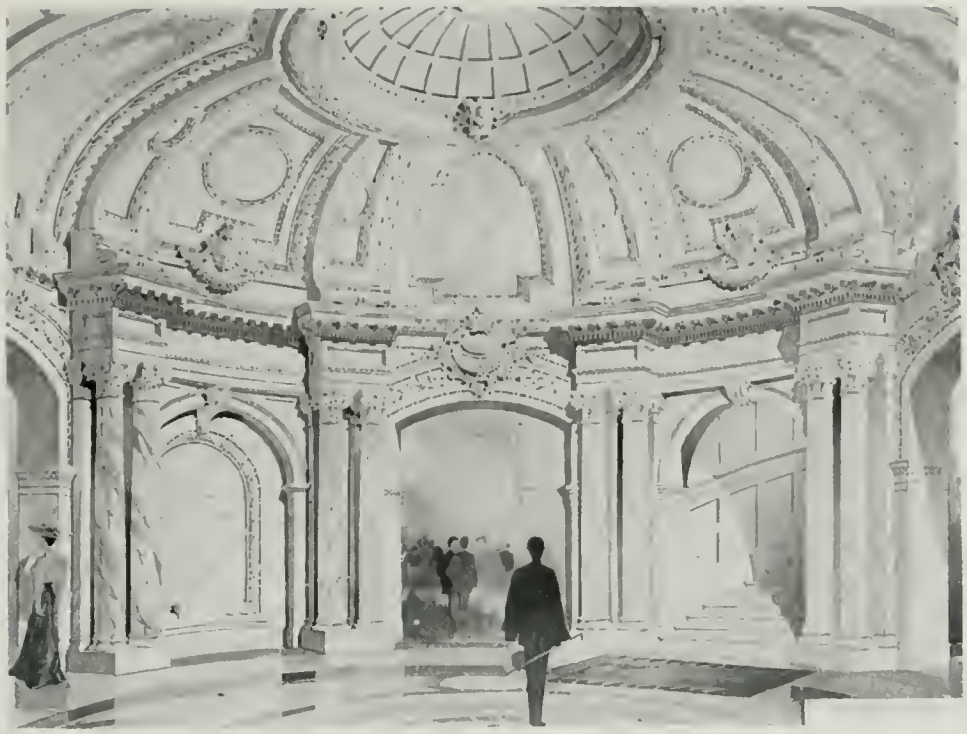
Wilshire Branch Exchange Los Angeles California

University Building, Seattle, Washington

Slow burning mill construction has been used on buildings in San Bernardino, Seattle, Hollywood, Aberdeen, etc. Class A buildings have been erected in the large cities, and one of the most substantial of this type is now under construction in Spokane. All exterior window openings are to be of metal with wire glass panes, and the interior finish throughout will be of metal and other non-combustible materials. The facades will be of gray pressed brick laid up in the English bond with granite and terra cotta trimmings. The first and second stories will be used by the commercial department where all business with the public will be transacted. The operating rooms will be located on the third and seventh floors, and the fourth floor will be used for terminating the underground cables and miscellaneous racks, frames, etc. Spacious lounging and reading rooms for the use of the operators and other women employees will be located on the fifth floor, and the sixth and eighth stories are to be used for the general offices of the plant and traffic departments. The structural frame work is designed to carry an additional six stories, and provision is made for an extension on the rear. The building is to be equipped with all modern conveniences, such as electric elevators, heating and ventilating system, vacuum cleaning system, pneumatic tubes, etc.

Union Exchange, Spokane, Washington

The New Hollywood Exchange, Los Angeles



Interior of Scottish Rite Temple, San Francisco
O'Brien & Werner, Architects

Possibilities of Brick and Terra Cotta

STRUCTURALLY considered as a building material, terra cotta must be placed in compression on account of its frangibility, yet it plays many parts and in conjunction with steel and iron framing is of the utmost value to architects and architecture, says a writer in Construction News.

Terra cotta blocks are set in three different directions, viz.: Placed vertically, horizontally and diagonally and in arch work, partake of and possess all the qualities of brick and stone without all the excessive labor of cutting and setting always essential to these materials. Furthermore, in tile form, the possibilities are limited only by cost and requirements. Avoiding the use of terra cotta in work as alluded to, we will take up its employment in geometrical details, such as arches, groins, etc., all of which are difficult, both to manufacture and set. The fundamental basis of all construction is, of course, the drawing specifications which for this class of construction must be clear and very specific, showing distinctly to an exact scale, how the several constituent materials blend together to solidify the construction. Small one-eighth or one-quarter inch scale plans, elevations,

sections, etc., should be furnished by the architect with one-half inch, three-quarter inch, or one and one-half inch scale details of all molded work or curved, so that the manufacturers may lay out the work accurately and intelligently, without error or loss of time. It is always for the maker of terra cotta to strictly adhere to and follow out the architectural drawings and in many cases, changes have to be made to complete the construction, but this may all be done by the co-operation and mutual agreement of all interested.

There are, however, some good rules to follow which are worth noting. If the dimensions on the details are vague it should be the duty of the draughtsman to visit the works and compare the steel frame erected with every measurement. It is not wise to accept curved members on plans as accurate. It is better to make light wood or stiff paper or cardboard templets to fit the steel as set. This is imperative for finished work. The matter of trying and anchoring to iron, steel or brick core, members or backing must be fully provided for, leaving holes, slots, etc., when molding.

The beds of all blocks, top, bottom and sides, should, as far as possible, be in the direction of the thrust or pressure. In vertical or horizontal work, this is simple, on curved details difficult. In arch work the compression center line is in the middle of the depth of the ring, so that all top and bottom beds must radiate to the center or centers, from which the curve or arch is struck. This applies to all arches from semi-circular to elliptic, and similarly to groins, the lines and intersections of which can only be obtained by geometrical development, in full-sized details and with the extensive application of patterns and molds.

The matter of lettering and numbering every curved or ornamental block to correspond with the numbers, etc., on the shop drawings, must be done logically and systematically—using capital letters and Roman numerals for principal parts as bases, capitals, keystones, coigns, etc., and lower case letters, index figures and letters for minor parts.

The indexing, etc., is indispensable to the setter and should be accompanied by full classified lists with delivery invoice.

In arches, etc., special attention must be given to right and left hand details when listing, especially for work of the higher class, such as for churches, schools, etc., where the Gothic and Romanesque styles of architecture are used, the blocks will be varied and intricate. Much delay and loss of valuable time to masters and men is often caused by the absence or non-delivery of a single block, and it must be remembered that it is not always possible to employ a temporary dummy substitue of brick or wood. Of course this is impossible in arches or groins.

On the building under construction, if a large amount of terra cotta is to be introduced, the constant presence of a skilled setter is imperative. He must act in unison with the iron-worker and bricklayer foreman on the job, pick out all blocks, working from the listed and numbered plans, and see them properly set, level and plumbed, test all centering and see same is the exact form required, ample in strength and in exact position, do all fitting and correct all errors and omissions, watch as to full anchoring and see that measurements are as shown, see to the full backing up with brickwork and so arrange that there shall be no possibility of cracking or disfigurement by unequal settlement or error in bonding. The difference between the thickness of the joints of the finished blocks and the rough brick backing is too frequently the cause of fractured blocks in fronts and other defects.

Multnomah Hotel, Portland, Oregon *Gibson & Cahill, Architects*

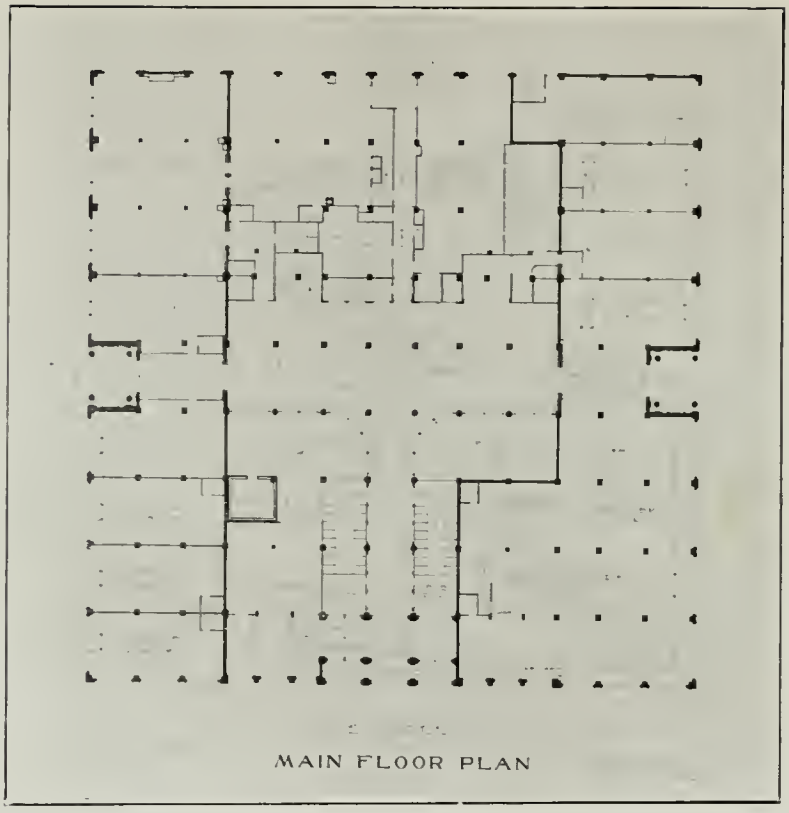
"The Multnomah," the Largest Hotel in Portland, Ore.

By B. J. S. CAHILL, Architect

THE Multnomah hotel, a fireproof reinforced concrete building now nearing completion at Portland, Oregon, occupies the entire block bounded by Ash, Pine, Third and Fourth streets. The building has eight floors and a mezzanine above the sidewalk, and two basement stories below over that portion of the area which is waterproofed. The waterproofed or deep basement extends over more than two-thirds of the entire area of the block.

During certain periods of the year, when the river Willamette is high, the water not infrequently rises to within four feet of the sidewalk level. And because hard gravel for footings is not to be found at much less than twenty feet below the street, to which depth excavations were carried, it will be seen that the floor and walls enclosing the "tank" portion of the basement had to withstand a pressure of sixteen feet of water. This means that at flood times there is a pressure, or rather upthrust of a thousand pounds to every square foot of waterproof basement floor. This floor is "pegged down" by the weight of the building bearing on columns 22 feet o. cs. N. & S. and 15 feet o. cs. E. and W. The intervening floor slabs 16 inches thick, of reinforced concrete, are designed to carry and distribute the vertical loads of the building under normal conditions, and to distribute the inverted load or "upthrust" under seasonal water pressure. This problem, not too simple in itself, was further complicated by the fact that some of the columns between two of the high wings of the main building were not themselves sufficiently loaded to hold down the floor slabs under a maximum head of water. This span therefore, of 30 feet between heavily loaded columns, is held down by a series of inverted reinforced concrete beams constructed under the main floor slab, and of course forming an integral part of the same.

The deep basement retaining walls are of an "L" section, one foot thick at the top and two feet thick at the bottom, the footing extending some 9 or 10 feet. Waterproofing is secured by compactness of aggregate, no attempt being



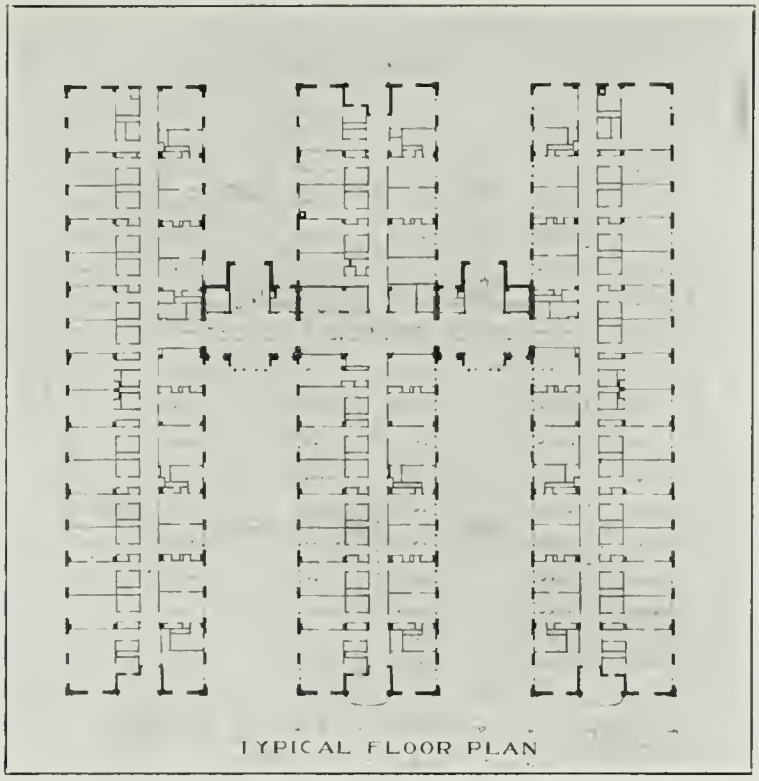
Main Floor Plan, Multnomah Hotel, Portland, Oregon
Gibson & Cahill, Architects

made to use a tar and felt skin. This method is made easier by reason of the local rock, which consists of smooth round pebbles without angles or broken edges. A careful blend of these water-worn pebbles, both large and small, with sand and cement, plus a proper proportion of hydrate of lime, yielded a remarkably close textured concrete.

The dryness of the finished basement is further secured on walls and floor by air spaces. Thus the finished walls are about four feet inside the concrete walls, the intervening space being used for pipes and air conduits, etc., and a gutter around this whole basement leading to a sump at the northeast corner of the boiler room.

The rough floor of the entire waterproofed basement is pitched toward this gutter. The finished floor is to be laid on 4″ x 12″ x 12″ hollow tile set with a 2-inch free margin all around and covered with stiff felt to receive a 2½-inch slab of concrete. All seepage, sweating and ooze, it is calculated, will find its way between and through the tile to the gutter at the edge of the basement, where it will meet any similar seepage from the walls, whence it will flow to the sump.

The columns throughout, up to the sixth floor, have spiral bound or hooped circular reinforcement, the forms for parts of the basement being of circular section (made of sheet metal), with some of octagonal shape in the main lobby, and the rest square. The columns in the upper stories are of plain rectangular or Hennibique type.



Typical Floor Plan Multnomah Hotel, Portland, Oregon
Gibson & Cahill, Architects

Exterior beams from the third floor up extend from window head to window sill, a distance of 34 inches, with the floor slab hung 8 inches above the soffit. The inside floor beams—two rows in each pavilion—run lengthwise on 22-foot spans. The three intervening floor slabs are constructed with rows of 12″ x 12″ x 6″ hollow tile, set 16 inches on centers. After reinforcing rods are set, one in each joist, the whole is filled with concrete 2 inches above the top of the tile.

The main floor slab and the roof slabs were laid without tile.

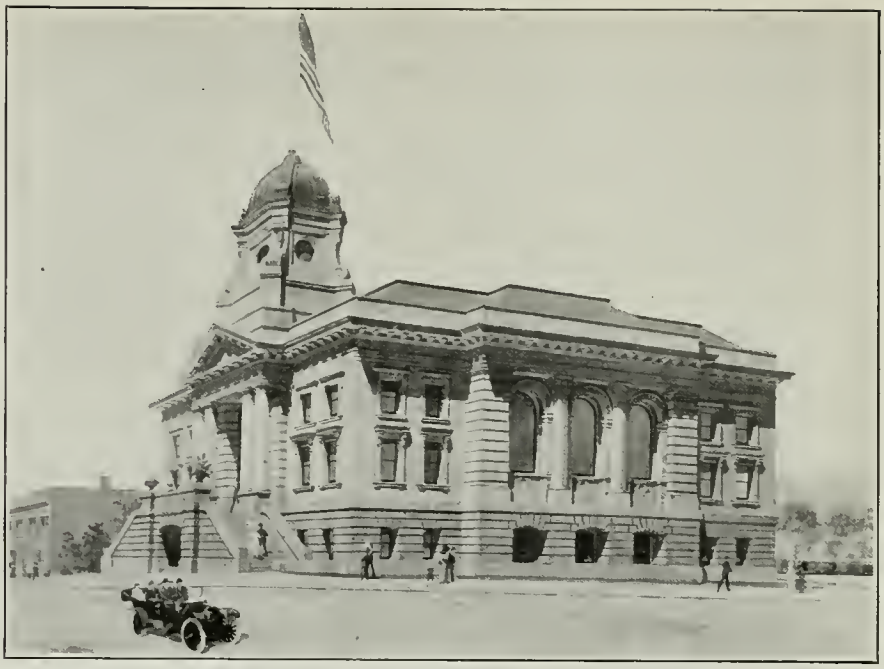
No curtain walls or any part of the building except the structural skeleton were built of concrete with the one exception of the safe in the hotel office.

All filler walls, curtain walls and partition walls were of brick, hollow tile or plaster blocks.

The heavy trusses over the banquet and assembly halls were built up of structural steel. These trusses, six in number, with a span of 46 feet, have a depth extending through one entire story. These trusses are carried on 30-inch square reinforced concrete columns.

The exterior of the building was originally designed for terra cotta and glazed tile, with the two upper stories in brick, but a subsequent retrenchment made it necessary to use the biscuit tinted "plastic" brick, originally selected for the upper part, for the whole building.

The arrangement of the hotel can best be seen from the sketch plans herewith printed. The plan is based on a correlation between the guest room unit and the column span most practicable in a 200-foot square block. The hotel



New City Hall, Vancouver, B. C.
Wright, Rushforth & Cahill, Architects

was intended to afford first-class accommodation at uniform and moderate prices. Nine bays of 22 feet span will yield a room width of a few inches less than 11 feet. A length of 16 feet, with 7 feet for bath, 6 feet for hall, and 15 feet for inside room, together with walls and partitions, gives a total width of 47 feet for each of the three pavilions, with two courts 29 feet 6 inches wide each.

The sixth floor on the exterior shows a change of treatment. There are more windows between the columns. This floor has each room double the size of the rooms below; viz., 22 feet, instead of 11. These are the rooms for traveling salesmen, with extra good natural light, and both gas and electricity, to display such goods as need any of these kinds of illumination. The floor above shows five rooms to 44 feet, for single men who like to live permanently at a hotel at a minimum cost. This floor contains also rooms for servants, and a large laundry and carpet room.

The mezzanine floor is planned for the use of convention visitors. The corridors are wide, the lobbies ample, and there are committee rooms, anterooms, banquet and serving rooms, and all that is necessary to accommodate the officers and committees of any type of convention, political, social, scientific or religious. This floor looks over into the main lobby, which is in the shape of a large "T," each arm punctuated at the gallery level with a huge palm tree directly under a handsome skylight.

The upper gallery of the basement is planned to contain a billiard room, besides toilets and quarters for kitchen and engine room help.

The basement will contain a large grille, bar and bowling alleys, besides all the necessary kitchens, storerooms and space for machinery, ice, heating and cleaning plants, etc., necessary to run the highly complex business of a large modern hotel.

The building should be ready for occupancy by Christmas, and will cost over $800,000.

Security Trust Company's Building, Bakersfield, California
Frederick H. Meyer, Architect

Interior of Security Trust Company's Bank Building

Building for the Bankers' Investment Company, San Francisco
Frederick H. Meyer, Architect

The Architect and the Engineer*

By LUZERNE S. COWLES

Assistant Designing Engineer, Boston, Mass., Elevated Railway Company

WHILE engineering and architecture were not in the beginning disassociated, it must be admitted that the tendency in the United States to keep them widely separated has until recently been decidedly marked. That this tendency has proven a detriment to the proper æsthetic development of our communities cannot be denied. In many European countries the harmonious and artistic development of civic centers during modern times is a matter of history. Such development has proven a boon to the cities or communities so favored. Evidences of this are seen on every side, and the efforts in this direction have been generally successful. In ancient times the architect acted as his own engineer, inasmuch as the exact science of figuring stresses and strains was unknown. Judgment and precedent were governing features in the design of structures, which were usually built of wood or masonry. There was little haste in completing a project once commenced, and artistic treatment requiring much time and labor was rendered possible. The ultimate aim of securing the best results was frequently attained, since time and labor were less important factors than they are today. A century ago, engineers were either military or civil, the civil engineer being chiefly occupied with surveying. The architect seldom required the services of an engineer except in the capacity of surveyor. Sizes of members for building construction

*Paper presented before the Congress of Technology at the fiftieth anniversary of the granting of the charter of the Massachusetts Institute of Technology.

were usually determined by "rule of thumb," such determination being strictly an architectural or builder's problem. As time went on, the art of bridge building with materials other than stone was gradually developed. The somewhat primeval state of this country was such that the demand for anything more than utilitarian was seldom expressed. To keep pace with the rapid growth of the railroads and other projects, the expense incurred by the erection of even the cheapest classes of structures consistent with good design was necessarily very great. The public demanded, as a rule, service, caring little for the appearance of bridges and buildings. The adoption of the cheaper methods of construction no doubt accelerated the growth and development of the country at large. Although the Government was financially able to erect elaborate structures, public service corporations, and the like, constantly confronted with heavy charges for construction and equipment, were compelled to limit the cost of their structures frequently at the expense of appearance. Municipalities have proven many times to be grave offenders in this respect. To satisfy urgent demands, the erection of hideous structures has been permitted, with slight hesitancy. This radical spirit recently asserted itself in the otherwise conservative city of Rome. A steel bridge was erected over the Tiber in the midst of an atmosphere utterly antagonistic to this type of structure. The excuse for such a blot on the landscape was no doubt that an iron structure could be built cheaply and quickly, and would be at best but temporary. The word "temporary" in connection with a structure may mean three years or thirty. Many an eyesore has been permitted on the plea of its temporary nature when, with a little patience and persistence on the part of the public, a first-class permanent structure would have been assured. Coupled with the increasing wealth and population of the larger cities of the United States there appears at the present time, from public and press alike, the demand for rational civic improvement along harmonious and well defined lines. Today, while the architect may consider the engineer somewhat inartistic, he does not hesitate to consult him on all matters where engineering judgment is desired. On the other hand, the engineer may consider the architect at times extravagant; nevertheless, he consults him freely, with the result that certain structures, particularly when constructed of metal, are vastly improved in appearance. It is obvious that some types of engineering structures are hardly suited to much adornment. Adorning construction should at all times be fostered, but constructing ornamentation can scarcely be advocated. An elevated structure, for example, ugly from its very nature, could only be considered in the premises as a violation of real art. To construct much ornament for such a structure would not ameliorate conditions in any ordinary case.

To quote a well-known Western architect: "True architecture is construction carried to the highest point of development without the necessary addition of any elements foreign to its own conditions of stability and strength. Structure cannot be elevated into the domain of art merely by the application of ornaments. Ornament is contributory to a work of art, and not essential to it. A Cistercian abbey has no ornament, but its rank as a work of art is as high as that of a Clunisian abbey, which abounds in the richest decorative accessories. Certainly the true function of ornament is not to conceal or obscure construction, but to illustrate it. It is the misfortune of the engineer that he is dealing with a strictly mechanical problem, and is therefore constrained to use materials and methods which have as yet never been developed in the direction of that more perfect union which really constitutes the essential qualities of grace and beauty." Engineers should foster the spirit of close co-operation with architects, and the public of our large cities has the right to

expect the erection of bridges and other structures which will be an ornament rather than a detriment to their city. Such results will be attained if the public demands them, and our cities will tend to become more attractive in every way. The necessity for engineers to consult architects on all important works is coming to be too well recognized to require special emphasis. Examination of many structures might lead to the conclusion that many engineers endeavor to avoid beauty in their construction. Messrs. Carrere and Hastings, architects, appeared to share in this belief in a recently published communication, in which they write as follows: "In general, engineering works do not aim at beauty, and we think this is always a great misfortune. Any engineering work is a spot on the landscape, or in the city, which has either a good or bad influence on the general appearance of the panorama and upon its enjoyment. The fact that the first aim of every work of engineering is practical, that the essential qualities are strength, simplicity, and economy of cost and of operation, leads many very able engineers to the conclusion that they fail in these qualities in the degree in which they may be artistic; and for this reason many of them are not only indifferent, but are opposed to having their work beautiful. We believe that the great difficulty is due to the fact that engineers, not having been trained in matters of art, do not conceive or plan their structures aristically. They should seek the advice of the architect at the very start, so that the entire work may be designed and constructed on artistic lines, which may even make the use of ornament absolutely unnecessary, or may make it of so little importance that it may be almost bad, and the structure still be beautiful." Private individuals assume the right to erect almost any type of building that they see fit provided the local building laws are in a measure complied with. Little regard for the feelings of one's neighbors is frequently shown. Public service corporations are beginning to realize the importance of erecting only first-class structures, perfect not only from an engineering but from an architectural standpoint.

The Pennsylvania Railroad station in New York and the Forest Hills Terminal of the Elevated Railway in Boston are typical examples of the combined efforts of the engineer and the architect. The same co-operation is desirable in the construction of bridges. The original bridge was the fallen tree of the aboriginal, surely more agreeable to look upon than some modern efforts. One frequently considers the engineer as the sole person to consult in the construction of a bridge. Exceptionally pleasing results have, however, been obtained in the construction of the nine-span masonry arch bridge crossing the Connecticut river at Hartford, and the eleven-span steel arch bridge over the Charles river between Boston and Cambridge. This was rendered possible by the close union of engineer and architect. This close association has many advantages other than the gain in æsthetics. The architect, after such association, plans his work so as to make the arrangement of his supporting structure perhaps more orderly than might otherwise obtain. The engineer endeavors to plan his work so that the architect may have ample freedom to exercise his art. Their combined efforts redound to the advantage of their employer, whether municipality, corporation, or individual, the result being the best possible under the particular conditions involved. It is only by the close union so frequently noted today that results most favorable to the public at large may be obtained.

Many architects' offices now employ a so-called structural architect who might properly be called an architectural engineer, while any large engineering office surely requires the services of at least one man well versed in the general principles of architecture. The training of architects in close proximity to engineers should be encouraged. The architect's work embraces the design

of large buildings whose design is dependent on engineering theory and experience. This proximity need in no way influence the architect's artistic tendencies, but by promoting the scientific method of thought, will train his mind to better work out his own particular problems. The alliance of engineer and architect insures better structures, with, possibly, a more orderly arrangement, and frequently a saving in material and labor. This result is a distinct advantage to the community, as it means economical construction, together with an æsthetic treatment of what might otherwise be unsightly or commonplace.

* * *

Another Tall Building for New York

WITH the exception of the Eiffel Tower, in Paris, the new Woolworth building at the west side of Broadway, between Park place and Barclay street, New York, of which Cass Gilbert is the architect, will be the tallest structure in the world. It will be forty-five stories high.

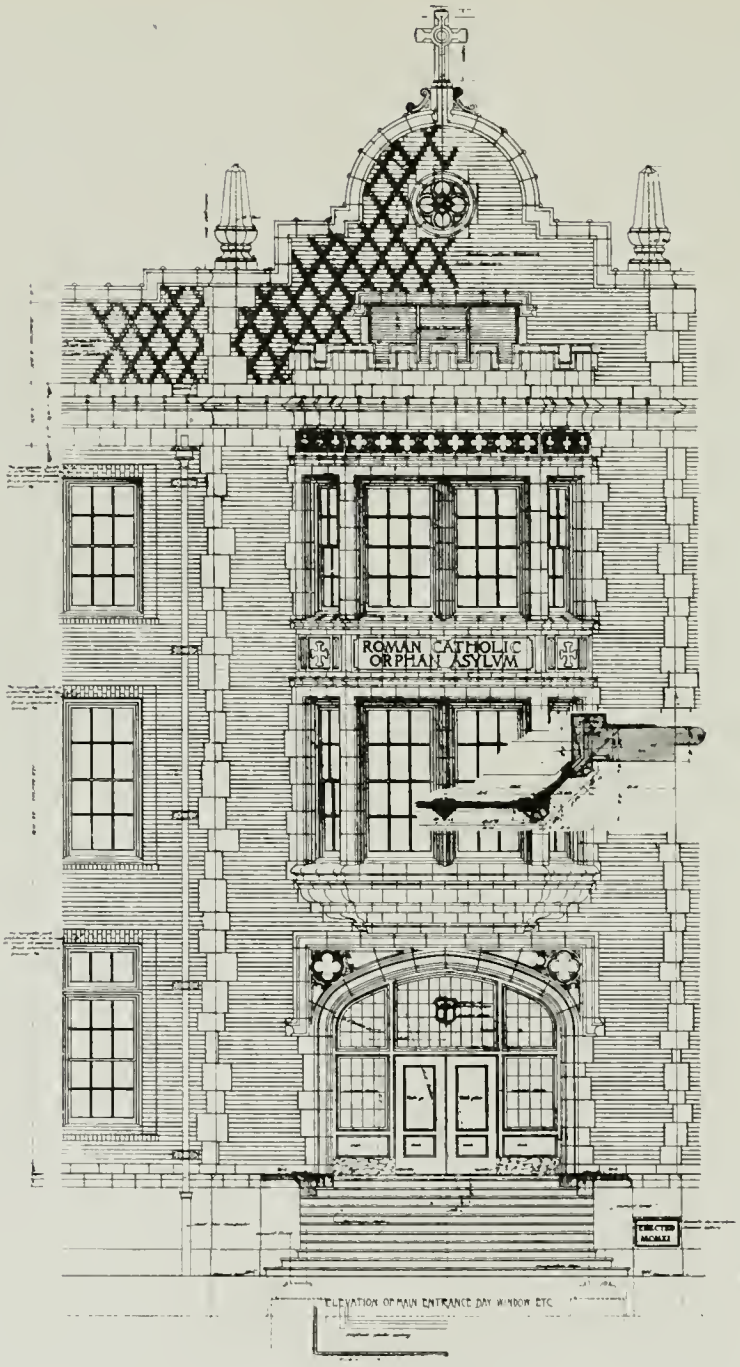
According to the specifications, the Woolworth building will measure 750 feet from the door of the cupola down to the street level, and will contain more than 20,000 tons of steel girders. The cost of the building will be more than $7,500,000. The main structure will be twenty-nine stories high, and will measure 152.1 feet on Broadway, 197.1 feet on Park place, and 192.6 feet on Barclay street. The main structure will be two stories higher on Park place and Barclay street than on Broadway.

One of the principal features of the building will be a tower, which will rise from the main structure to a further height of 366 feet. It will be twenty-six stories high, and 86 feet wide and 84 feet deep. On the top of this will be an electric light. On the fifty-fourth story will be the observatory. The first story on the street floor is designed for stores and an arcade, with openings on Broadway, Park place and Barclay street. The banking floor and mezzanine story on the Park place side will be occupied by the Irving National Exchange Bank, and in the basement will be a safe deposit vault, a restaurant, and a barber shop equipped with a swimming tank. The machinery, cold storage, refrigerating plant, power plant, electric generators, filtration plant, and other mechanical equipment will be placed in the sub-basement.

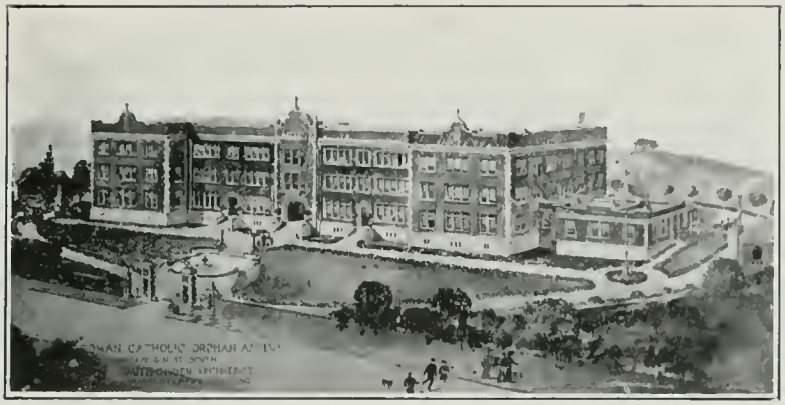
There will be four self-containing stairways, which will run from the top of the tower to the streets. These will be separated from the corridors and offices by fireproof walls and wire-glass doors. They are expected to make the stairs not only fireproof, but smokeproof as well. There will also be an outside stairway, which will be built in the court, accessible from the corridors on each wing. The elevators will also be inclosed with iron and wire-glass doors. There are to be thirty-four lifts for passenger service, twenty-four of which will be located near the Broadway entrance, arranged in four groups of six each. Sixteen elevators will be of the high-speed type, and six of these will run to the thirtieth floor, six to the forty-first, and four to the fifty-first floor. The cupola will be reached by way of a spiral stairway.

The total cubical contents of the Woolworth building, measured from the top of the caissons, exceeds 13,200,000 cubic feet. The caissons extend down to, and are embedded upon, the solid rock from 110 feet to 120 feet below the level of the sidewalk.

The exterior of the building will be of stone and terra cotta, and it is stated that the design will be a combination of the Italian, French and modern renaissance throughout the main part, with Gothic steeples at the roof of the main structure.



Detail of Front Elevation, Roman Catholic Orphan Asylum, San Francisco
Smith O'Brien, Architect



Perspective View, Roman Catholic Orphan Asylum, San Francisco
Smith O'Brien, Architect

Two Notable Catholic Buildings for San Francisco

TWO notable buildings for the Roman Catholic Diocese of San Francisco have been recently designed by Architect Smith O'Brien of that city. One of these structures is the Mount St. Joseph Orphanage which will replace the building destroyed by fire last winter.

The plan of the building, according to the drawings of the architect, will be in the shape of the letter "E," this arrangement giving the maximum amount of light and air to every portion. The main front will be about 360 feet long, while the three wings projecting from it toward the rear will each be approximately 150 feet long. Brick partition walls, with fire doors in them, will be used to divide the building into five separate sections, so that, in the event of a fire occurring, it may be confined to the section in which it originated. Numerous and wide staircases, well separated from each other, as well as outside staircase fire escapes, will diminish the danger of fire to the inmates to a minimum. Every precaution is also to be taken to fully equip the structure with fire-fighting apparatus.

The new orphan asylum will be planned to accommodate 500 children and 50 sisters.

The first floor will contain six classrooms, two large playrooms to be used during inclement weather, an assembly hall with a seating capacity of 500, two large refectories seating 250 each, two small refectories, a cooking school, kitchen, pantries, storerooms, parlors, reception room and offices.

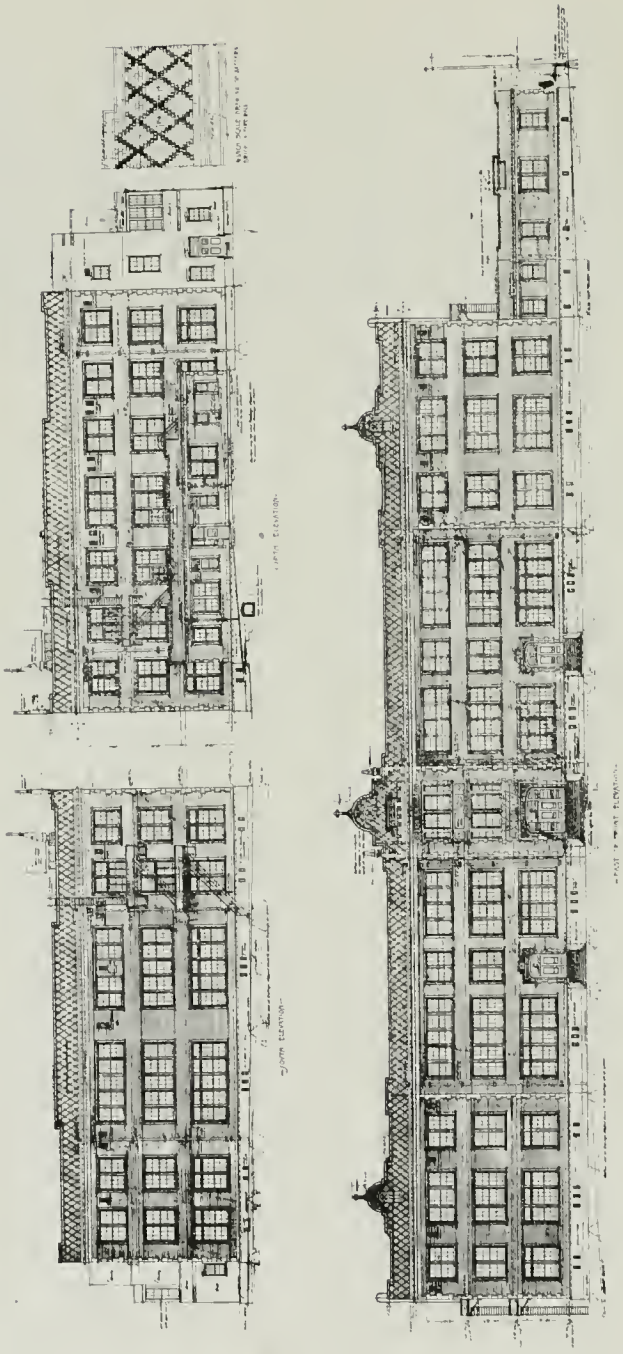
The second floor will contain three classrooms, two large clothes and sewing rooms, infirmaries for the children and the sisters, the pharmacy, bathing and toilet conveniences, the sisters' dormitories, community room, and the chapel with a seating capacity for 500 persons.

The large and airy dormitories, with their bathing and toilet rooms, will occupy the whole of the third floor.

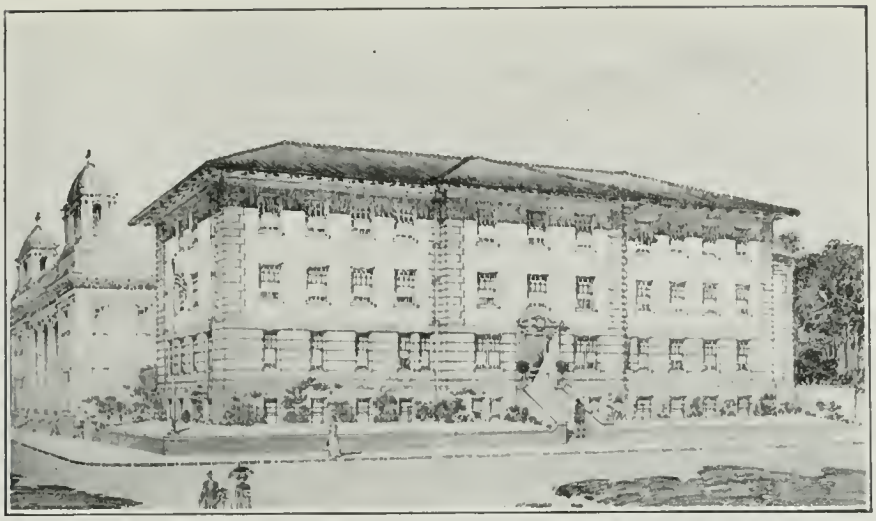
The exterior of the orphanage will be of red brick and light gray terra cotta, simple and dignified in appearance in the Tudor style of architecture.

The cost of the building, including approaches, will be about $210,000.

Work is progressing on the building of a new priory for the priests of St. Dominic's parish, on the northeast corner of Bush and Pierce streets.



South, North and East Elevations, Roman Catholic Orphan Asylum, San Francisco
Smith O'Brien, Architect



Priory for St. Dominic's Parish, San Francisco
Smith O'Brien, Architect

The want of the new building is badly felt, as the present structure, now over forty years old, is in a dilapidated condition.

Mr. O'Brien's design shows a simple and dignified building in the Italian style, of red brick, white cement and red tile roof, with wide overhanging eaves.

The entrance on Bush street will be of white sandstone with the seal of the Dominican order carved on the cartouche over the door.

The building will be set back 15 feet from the sidewalks of both streets, this space being terraced and laid out in grass and shrubs, thus giving it the proper setting. The main front will be 124 feet long, facing south on Bush street, so that all the bedrooms which are on this side, will have a maximum amount of sunlight. The frontage on Pierce street will be 40 feet wide.

The priory will be four stories high, including the basement one-half above ground, and will be of Class C construction, reinforced with a steel frame, thereby making it earthquake-proof.

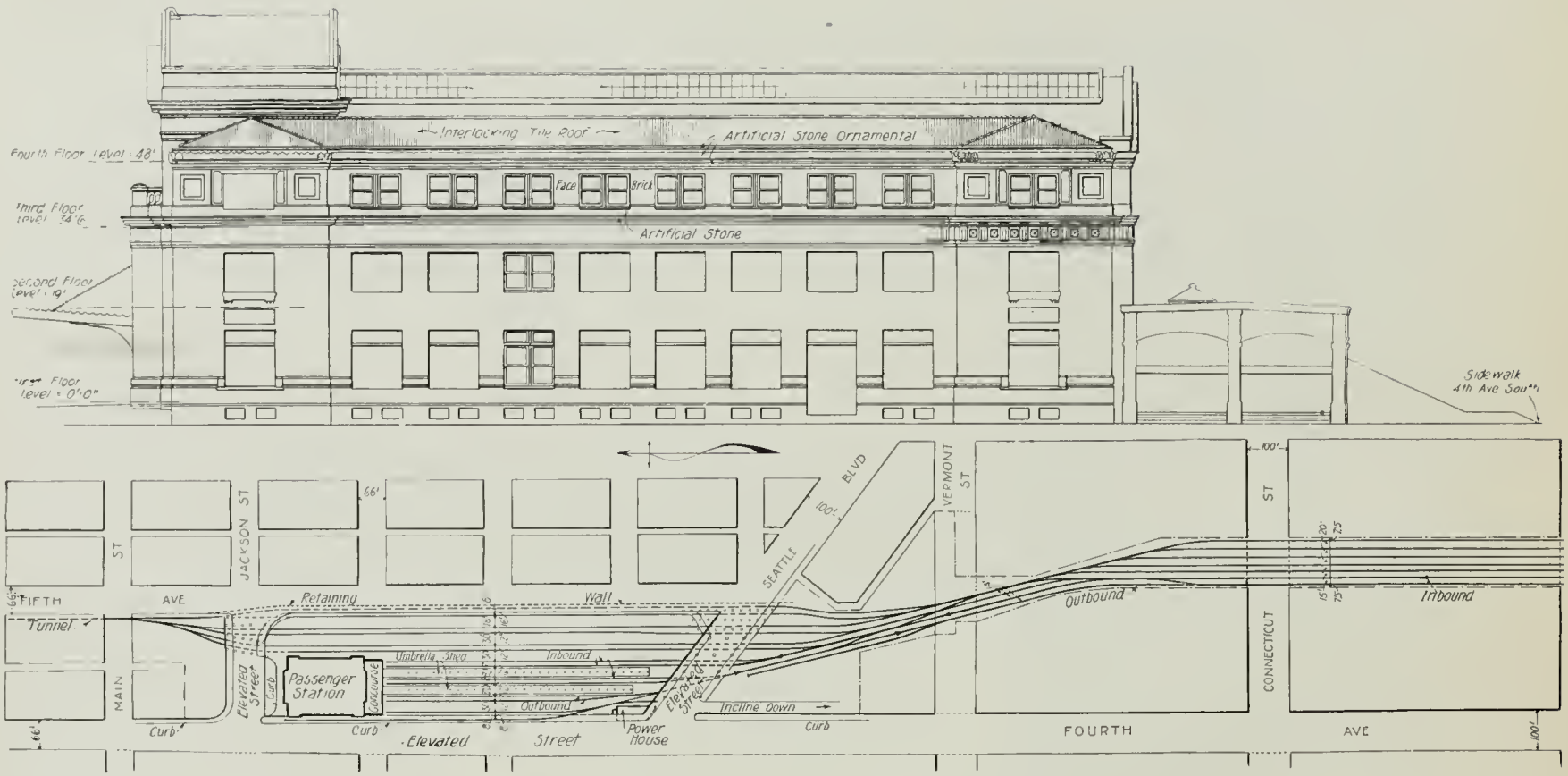
* * *

Result of Olympia Competition

Much interest has been taken in the recent competition held by the State of Washington to secure plans for the new Temple of Justice, a $350,000 structure which is to be erected at Olympia. The committee of award, composed of Architects Bebb of Seattle, W. B. Faville of San Francisco and Kirk Cutter of Spokane, has selected the design submitted by Architects W. R. Wilder and Harry Keith White of New York. The plan shows a handsome classic structure of the Class "A" type.

The other prizes awarded were as follows: Howells and Stokes, Seattle, second prize, $1000; David J. Myers, Seattle, third prize, $750; Wilcox and Sayward, Seattle, fourth prize, $600; and Ernest Flagg, New York, fifth prize. Honorary mention was given to G. Albert Lansburgh, San Francisco; Milton Lichtenstein, San Francisco; W. Marbury Somervell, Seattle; William K. Macomber, Seattle and Longe Ewald, St. Louis.

Thirty sets of drawings were submitted, seventeen of which were prepared by architects in Pacific Coast cities.



Side Elevation and Track Scheme, Passenger Station, Oregon-Washington Railroad & Navigation Company, Seattle, Washington

New Passenger Station of the Oregon-Washington Railroad & Navigation Company, Seattle, Washington

Reinforced Concrete Terminal Depot at Seattle

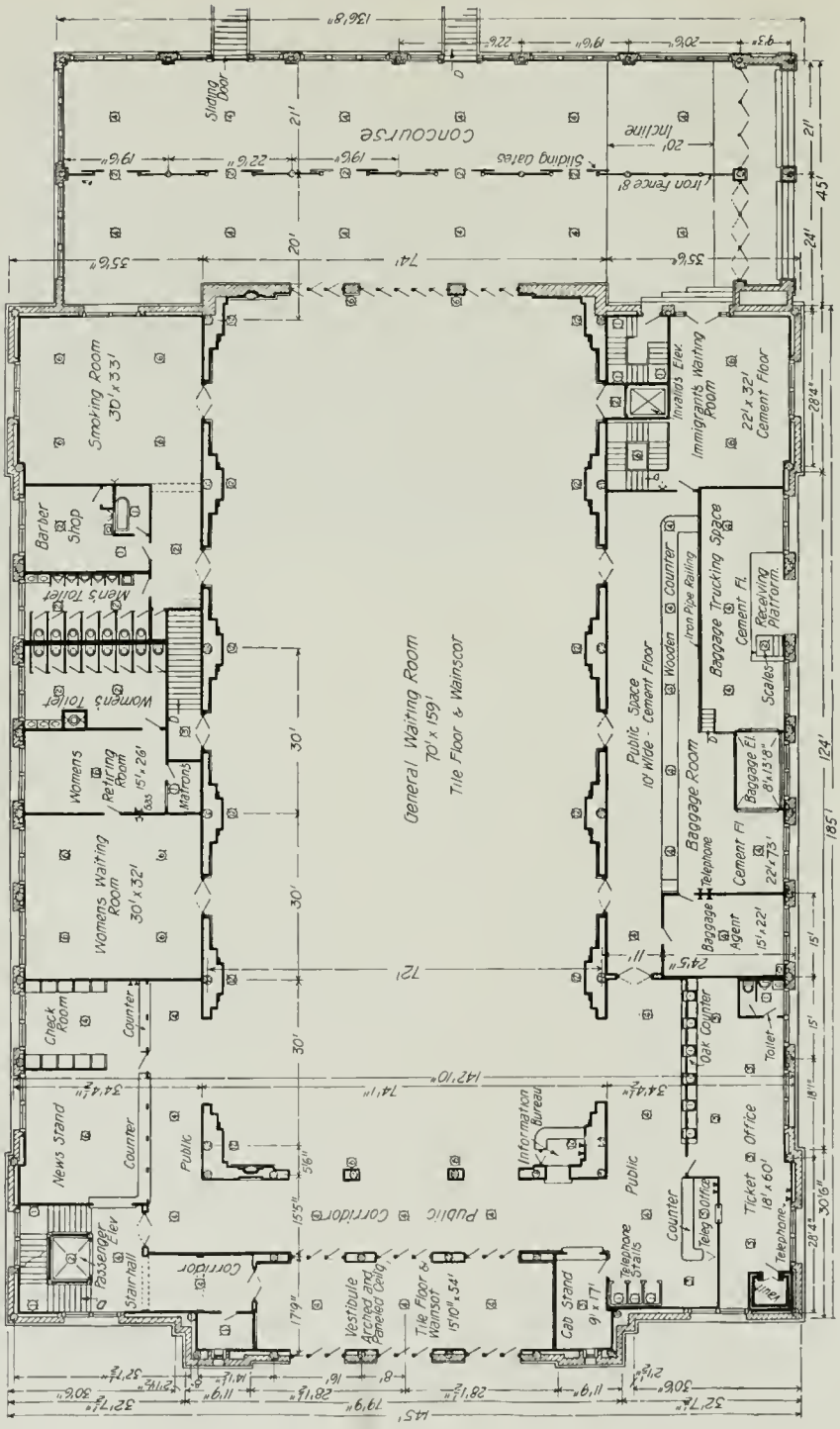
By W. M. CAMP*

THE extension of the Harriman lines into Seattle from Portland was begun under an organization known as the Oregon & Washington Railroad, but recently the official designation of all the Northwest lines of the Harriman system was changed to the Oregon-Washington Railroad & Navigation Company. This organization has acquired an equal and joint interest in the Northern Pacific Railway tracks from the bridge over the Columbia river to Tacoma. This line between Tacoma and the Columbia river bridge, near Vancouver, is being double-tracked and put into condition for the larger traffic of the joint operation. * * *

The terminals within the city of Seattle, now practically completed, are a passenger station and yard, on the south side of Jackson street, between Fourth and Fifth avenues south, and a freight station and team tracks at First and Dearborn streets. The adjoining three streets mentioned are elevated on reinforced concrete viaducts, built on reinforced concrete columns. Seattle boulevard, one of the main thoroughfares, crosses the tracks of the passenger yard diagonally. This also will be on a concrete viaduct. South of Seattle boulevard the yard diverges to the eastward one block, passing through a district of industrial establishments.

Returning now to the passenger station, the property is bounded on the east by a high retaining wall, the sidewalk on Fifth avenue south overhanging the same, while on the west the space under Fourth avenue is open and will be utilized as a thoroughfare to give access to the baggage and express rooms on ground floor. The incline leading down to this is from Seattle boulevard, as shown. This driveway on ground level adjoins the yard of the station of the Northern Pacific and the Great Northern Railways, the two stations being only one block apart and facing on Jackson street.

*Editor The Railway and Engineering Review, Chicago, to whom we are indebted for the accompanying illustrations.



Main Floor Plan, O.-W. R. & N. Co. Passenger Station, Seattle, Washington

The progress view of the property from the rear shows the covered train platforms at the back of the station and the retaining wall at the right. This wall is 1681 feet long and 45 feet high. The street viaduct is supported on this wall on the east side and on reinforced concrete columns on the west. The viaduct is 940 feet long and the 8-foot sidewalk is cantilevered out beyond the columns.

The passenger station, now completed, is a three-story structure, 146 x 186 feet, resting principally on reinforced concrete piles. Altogether, there are more than 4500 concrete piles in the foundation, in addition to some timber ones which were used for the deepest driving, which, in some places, was 90 feet. These concrete piles were made by driving a collapsible shell form, then withdrawing it and filling the hole with concrete. Both the MacArthur and Raymond systems were used.

Structurally, the station is of reinforced concrete throughout, the walls being faced with paving brick. The floors and stairways are also of reinforced concrete, and the roof consists of reinforced concrete slabs on steel. The roof slabs are covered with 4-ply Brooks brand asbestos sheets.

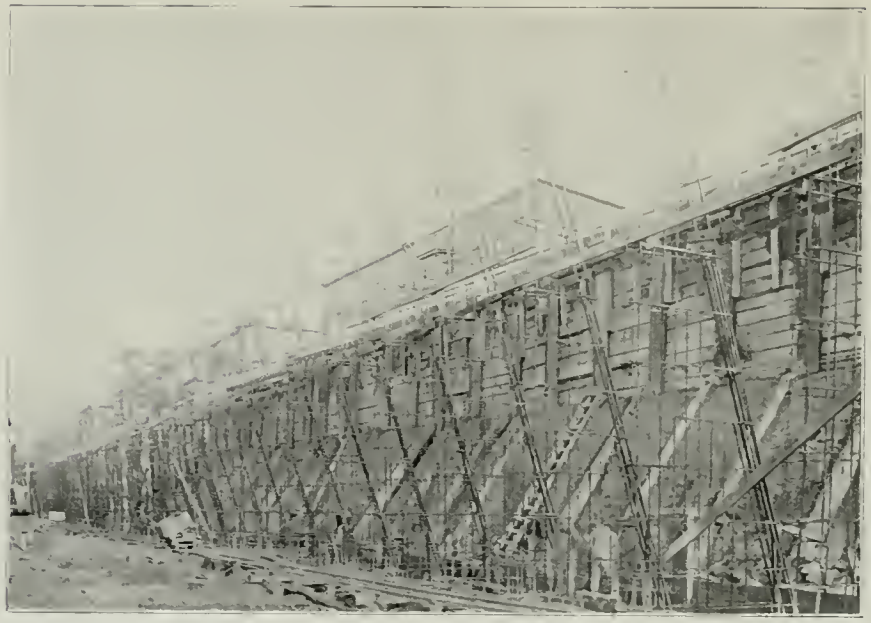
The main floor is at the street level, which, as previously stated, is elevated and on a viaduct. Passing from the general waiting room to the south end of the building, one enters the concourse, which is 40 feet wide, and from which there are two lines of stairways leading down to the platforms at the track level. These platforms are covered with umbrella roofs. The baggage storage facilities are on the ground level, under the main waiting room, and on a mezzanine floor. On the ground floor are located also the mail and express facilities and an emergency hospital. The second and third floors will be occupied by general offices. The general waiting room, 70 x 159 feet in size, has a mosaic floor, green tile wainscot and plastered walls. The finishing on main floor is oak, and on the upper floors fir. The contractor for the erection was Thompson-Starrett Company of New York City. The cost of the passenger terminal has been about $1,350,000.

The inbound freight house in 50 x 800 feet, and the outbound house 30 x 500 feet, with room for extension of either. The yard tracks of these stations for loading and teaming purposes are 2100 feet long. The inbound and outbound houses lie parallel, with six tracks between, with capacity for loading and unloading 102 cars at a time. Midway between the two buildings there is a roofed concrete transfer platform 12 feet wide.

The buildings are one-story, steel frame, encased in concrete walls, and fireproof throughout. The foundation consists of Simplex concrete piles about 40 feet long. The roof construction consists of concrete slabs 2½ inches thick reinforced with "Hy-Rib" expanded metal. These slabs are supported on steel trusses, and are finished with Malthoid roofing. The windows have metal frames.

The concrete floors are 4 inches thick, with a surface layer of asphalt 1 inch thick. There are fire walls across the building about 160 feet apart. Over the platform on the track side and over the doors on the team side are ribbed wire glass awnings, and at each door on the track side there is an electric light plug for extending lights into the freight cars. There are hose reels at each end of every 160-foot section and a scales in the middle of each section. For anchorage, to be used in pulling heavy machinery off the cars, there are tackle rings made fast to bolts embedded in the concrete floor.

The doors are of the Kinnear rolling steel type. On the track side they are 18½ feet wide, and on the team side 13½ feet wide, located at 20-foot centers on both sides. The height of the door is 10 feet. The driveway on the team



Reinforcing System of Fifth Avenue Concrete Retaining Wall, O.-W. R. R. & N. Co., Terminal

Rear View of Fifth Avenue Retaining Wall, O.-W. R. R. & N. Co. Terminal, Seattle

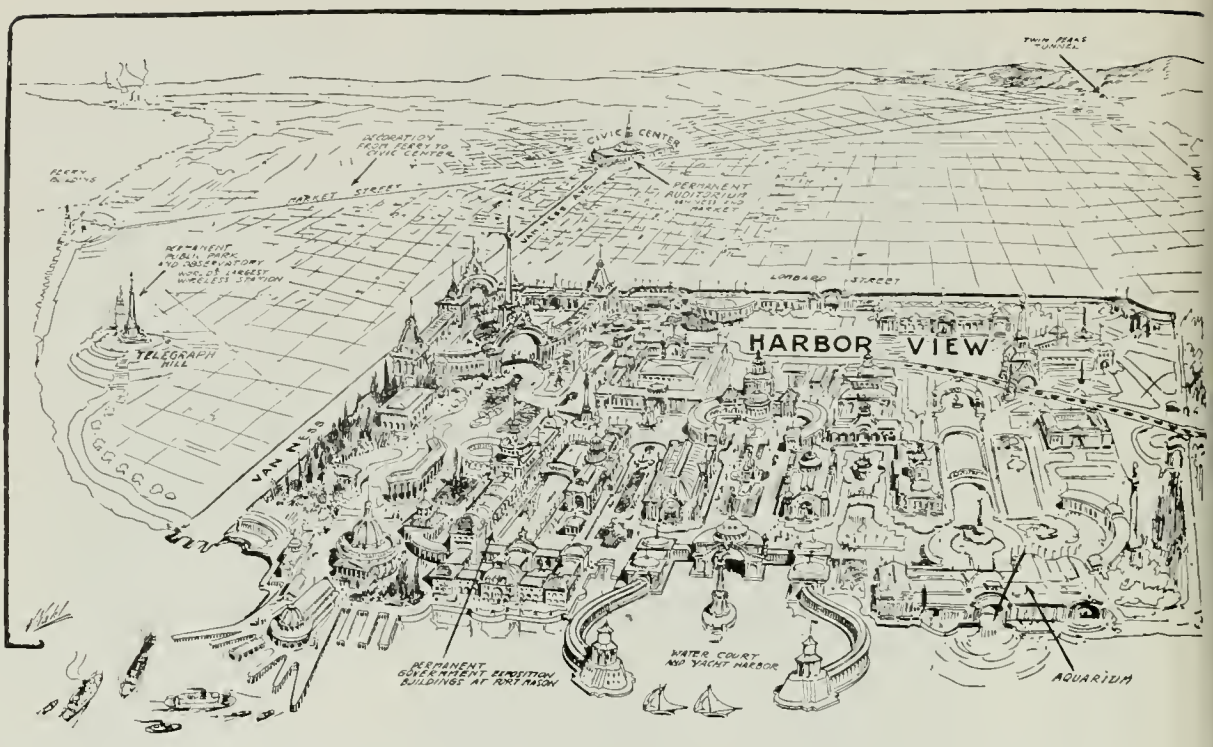
Reinforced Concrete Piles, Oregon - Washington Railroad and Navigation Company, Seattle, Washington

side is paved with vitrified brick. The walls are protected by a timber wheel guard and with channel guards at the sides of the doorways.

For the present the freight houses have been only partly built. After the new passenger station is put into service a temporary station which is located on the freight terminal property will be torn down to give room for extension of the freight houses. The plan includes a three-story head house at the Dearborn street end of the structure, to contain offices for the agents, clerks, and so forth.

The layout of the yard at Argo has the usual sets of receiving, classification, storage, repair and other tracks. The capacity of the yard when completed will be upwards of 3600 freight cars, including 188 on the repair tracks and 36 cabooses. The roundhouse will be built of reinforced concrete, 11 stalls at first, with room for extensions around the circle. The depth of the house is 95 feet, and there is an 80-foot turntable on concrete foundation. Wilson wood lift doors will be used.

The coaling plant, with capacity for 500 tons, will be built of reinforced concrete. The yardmaster's office, 22 x 84 feet, of reinforced concrete, is already constructed. All of the buildings, in fact, will be of reinforced concrete construction. The storehouse will be 40 x 127 feet. The shops will be built large enough to afford room for duplication of all facilities in the way of machinery. There will be one water tank of 65,000 gallons capacity. The ash pits will be equipped with pneumatic machinery for taking care of the cinders.



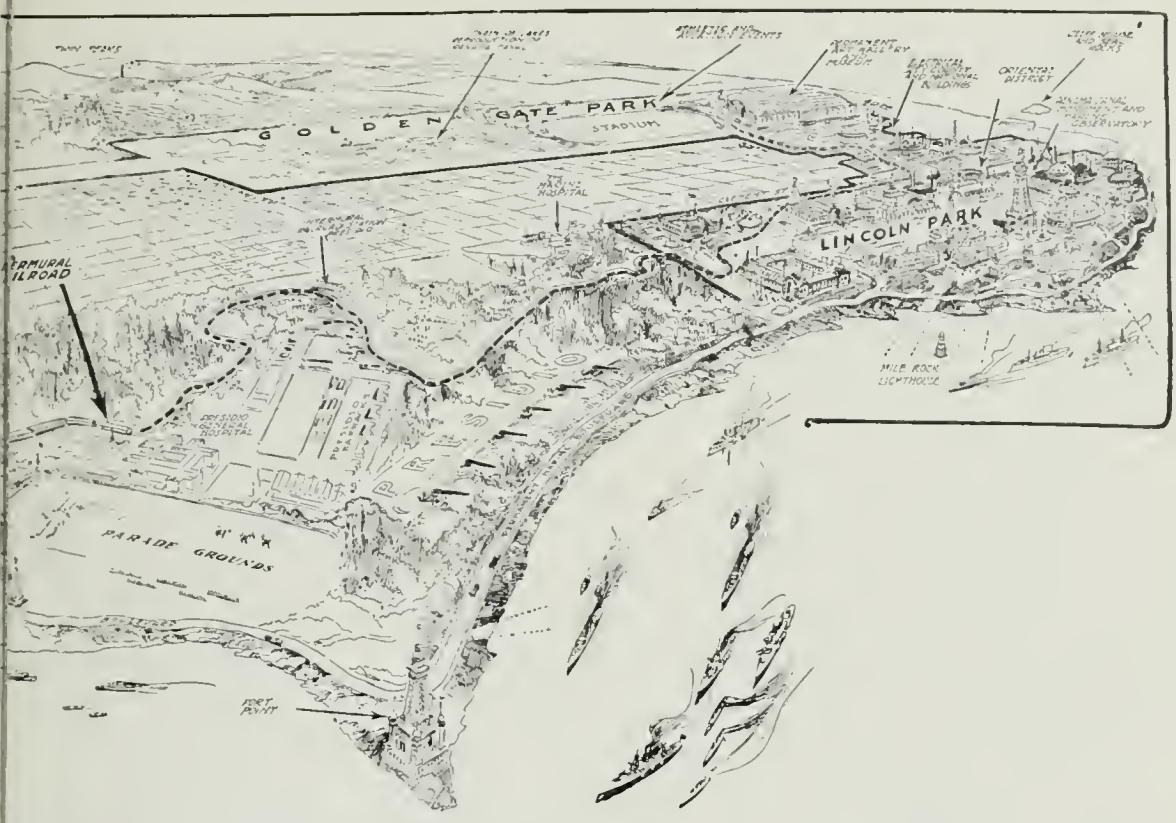
Tentative Scheme Showing Scope of Panama-Pacific Exposition Grounds, Taking In the Water Front.

Great Possibilities of the Panama-Pacific Exposition Site

THE accompanying bird's-eye sketch gives a fair idea of the scope of the 1915 exposition. It is a happy solution of a vexatious problem that for a time threatened to end most disastrously. By agreeing upon a clever combination of the three different sites—the San Francisco water-front, the Harbor View district and Golden Gate Park—the commission has pleased everybody and has provided a scheme of boulevards, parks and buildings that presents untold possibilities for the architect and the landscape artist. Heretofore world's fairs have been massed into one section, so it will be something of a novelty to come to San Francisco and visit an exposition that embraces two-thirds of the city. A boulevard along the water-front will connect the several sites, and an intermural railroad, which will run along the south sides of Harbor View and the Presidio and then break off, skirting Lincoln Park and running through the Richmond District to Golden Gate Park, will afford still further access to the different points of interest.

The various features of the exposition grounds will be distributed as follows, according to the tentative plans under consideration:

Harbor View—Of the territory bounded by Fort Mason, Lombard



Harbor View, Lincoln and Golden Gate Parks, San Francisco, California

Courtesy The Examiner

street, the Presidio and the bay front it is proposed to utilize between 250 and 300 acres. Here will be located such heavy exhibits as the transportation (locomotive) machinery, and, perhaps, the manufacturers' building; also the concessions and other features that will constitute the night life of the exposition. It is not proposed to do any filling in at the water front, but to construct there a yacht harbor, an aquatic park and other water-front features of the exposition. An aquarium is suggested for the present site of the Fulton Iron Works.

The Presidio—It is expected that the United States Government will erect here its Government buildings and exhibits, which, it is suggested, could be afterward used for division headquarters.

Lincoln Park—Lincoln Park is to be devoted to scenic features, and for that purpose improved and beautified. A giant commemorative statue at the summit, commanding the entrance to the harbor, is contemplated. Picturesque cafes and gardens are to be located here.

Connecting Lincoln Park with Golden Gate Park it is proposed to utilize some 200 acres of land in the Richmond district. Here will be located the foreign, State, and county buildings and the horticultural, electrical and other exhibits.

Golden Gate Park—Golden Gate Park is reserved for the construction of only permanent features that are calculated to add to its attractiveness

without destroying any of its natural beauty. Here are to be located the museum and art gallery, also Japanese and Chinese gardens, fountains and statuary. It is proposed to make the stadium the finest in the world and to build a coliseum around it. Another feature will be a miniature Panama Canal connecting the lakes. Only the section west of Twentieth avenue to be used for exposition purposes.

Telegraph Hill—It is proposed to commemorate the use to which Telegraph Hill was put in early days by erecting thereon a large wireless station. The hill is to be terraced and a permanent observatory erected on the city park.

Other Features—The ferry at the foot of Market street is to be made the entrance to exposition city. There will be a grand court and, possibly, viaducts to conduct passengers from either side of Market street. Market street is to be improved and beautified; also Van Ness avenue. An auditorium or convention hall is designed for Van Ness avenue at Market street.

The main entrance to the exposition grounds will be located near Fort Mason, with others at Lincoln and Golden Gate Parks.

The following is the official report of the committee of architects called upon to assist in selecting a suitable site for the fair:

Messrs. Hellman, Barneson and Davis, Committee on Site, Panama-Pacific Exposition Company—

Gentlemen: In compliance with your request we have discussed a solution of the site problem devised by your committee and have prepared a drawing to illustrate the salient features of this scheme.

The characteristic of this scheme is the arrangement of the buildings in three separated main groups and the connection of these groups by ample avenues, the whole of which form a link and continuation of a system of boulevards and parks which, logically, should eventually girdle the city. The buildings to be placed in the several groups should be determined later by close technical study of specific requirements.

(1) The scheme contemplates a group of buildings at Harbor View, taking advantage of the water lots for a water court and building on piles where necessary and without fill. This group would be accessible from the ferry and central station by an avenue on the seawall and parallel streets from the heart of the city by Van Ness avenue. Following this group there would be a government group on part of the Presidio. Thence by a wide avenue along the shores of the Golden Gate, access would be had to Lincoln Park. The beauty of the Golden Gate would thus be brought into the general plan.

(2) Lincoln park would form another group with appropriate buildings and monuments.

(3) From Lincoln Park a strip of land would be required which would connect it with a group in Golden Gate Park.

This chain of groups would form the main body of the exposition and would form a part of the girdle of points of interest which would continue from the park group via the Panhandle to the civic center, where it is proposed to erect a convention hall, opera house and other permanent buildings.

The next link of the girdle would be along Market street to the ferry building, which would be considered the main gate to the exposition city, and decorated accordingly. From the ferry a boulevard or causeway, accentuated by an observatory on Telegraph Hill, would lead to Harbor View and complete the chain.

It seems desirable not to go more into detail of the arrangement at this time, as it would tend to confuse the clear understanding of the scheme in general. It is obvious that the land surface thus put at the disposal of the exposition is ample to lodge any requirements that might develop, and it is also obvious that the scheme is susceptible of high artistic development.

ERNEST COXHEAD,
WILLIS POLK,
FRED H. MEYER,
ARTHUR BROWN, JR.,
GEORGE HOWARD.

One of the architects whose name appears here is quoted as saying:

"There is no good reason why Market street should not at once be decorated in a manner appropriate to the part it is to play in the exposition scheme. On occasions of celebrations held here, like the Portola festival and the Admission day celebration, Market street has been decorated and illuminated. Decorations can now be placed in Market street to stay until after the exposition is closed. A system of paristyles could be erected along the street, which would give it the holiday appearance which will be indigenous to San Francisco from now until 1915 at least, and ever after, if the spirit of the Panama-Pacific Exposition is perpetuated, as it should be.

"With the construction of the system of marine view boulevards contemplated in the report of the site committee, San Francisco will have a scenic feature unrivaled in the world. It will make San Francisco an international show place; it will give us something Paris has not. The boulevard can be constructed at a cost of probably $50,000 a mile for the roadway and $50,000 more a mile for ornamentation and walls. The extent will be about four or five miles; but even if the cost was $1,000,000 for the construction of the boulevard it would give to San Francisco an improvement, an attraction which could not be paralleled in the world."

Harris D. H. Connick, who has been selected as director of the works of the Panama-Pacific Exposition, is a graduate of Stanford University. Immediately on graduating he became assistant engineer to W. C. Ellsmore and F. E. Herrick on survey and works and was given charge of the design and construction of an auxiliary water supply system for fire protection, consisting of pumping station, fire boats and distribution system, the estimated cost of which is $5,000,000.

Other work under his guidance was the planning of main sewers at an estimated cost of $4,000,000, three incinerating plants for the destruction of municipal refuse, the estimated cost of which was $1,000,000; the laying out of the Geary street electric railroad, the estimated cost of which is $2,200,000, and planning work on street pavements, sewers and other work calling for about $2,000,000 per year in expenditures.

At the present time Connick has important work under him which aggregates in value $5,700,000, which is proceeding under sixty-nine separate contracts. In addition to that he is preparing plans and specifications for other work, the estimated cost of which is $3,000,000.

Connick has acted also in a consulting capacity on the sewer systems for a number of towns in this State. The work was estimated to cost $5,600,000. From December, 1899, to June, 1900, he was in private practice, devoting his time to civil engineering and mine surveying in California.

When Marsden Manson, now city engineer of San Francisco, took up experiment station work for the United States Department of Agriculture he appointed Connick as assistant engineer. He was in charge of the measurement of flow of water in rivers, by current meter and floats, the flow of water over dams, in flumes and irrigation ditches, and investigating and reporting on the practice of irrigation in the Yuba and American river basins. Connick did this work from June to November, 1900. At the conclusion of Government work he was appointed assistant engineer to the Board of Public Works of San Francisco, which position he has since held.

The director of works will have supervision and direct charge of the physical work and property of the Exposition Company during the construction period and the operation of the fair. He will be under the direction of the committee on buildings and grounds of the Exposition Company, but will be the head of the department and in charge of all construction work on the buildings and the grounds. With him will work the architects. The duties of the director of works require high technical skill and experience, and in Connick the directors believe that they have found a man competent to solve the difficult problems presented by the great work that must be accomplished during the three years and a half remaining until the fair is in actual operation.

* * *

High School Architecture

THE design of a high school building presents, in comparison with an elementary school, a complicated architectural problem that may well engage the highest skill of the architect and the most careful study of executive school officials.

The average high school involves an intricate organization to properly manage from 200 to 1500 students, pursuing four, five and even nine distinct courses of study, and each student taking up several elective branches. These students require not only study and recitation rooms, but also laboratories in which they may experiment, shops in which they may do practical woodworking, metal-forging and machine work, studios in which they may draw, apartments in which they may cook and sew, gymnasia in which they may exercise, and other rooms in which they may carry on a wide number of activities.

To arrange such a wide variety of rooms for so many specialized purposes requires more study than the average practical architect can apply. It should attract the best talent, and experience and considerable knowledge of the organization and management of high schools. It should, above all, call forth the most intimate study of the history and the future possibilities of the school on the part of the principal and teachers aided by the superintendent and possibly also, the board of education.—School Board Journal.

* * *

A Square Competition

Efforts seem to have been made to secure a square competition in the selection of an architect for a museum building of the Minneapolis Society of Fine Arts, to cost about $500,000. The competition will be held strictly in harmony with the code of the American Institute of Architects, under the direction of Professor Warren P. Laird, of the University of Pennsylvania. Several architects will be especially invited and paid for entering the competition, and a limited number of others will be chosen from the open field, to the best of whom will be awarded an equal number of similar fees. The final award will be made by a jury of five composed of a member of the committee, a museum expert, the professional advisor, and two other architects. The two additional architects and the museum expert will be chosen by competitors from among nominees designated by the advisor.

To Standardize Building Materials

By F. W. FITZPATRICK

THE medical profession has started in to reform medical expert testimony and has progressed so far that probably twenty States will, at their next legislative assemblies, pass laws regulating such testimony.

Expert testimony, it has been proven, is a block rather than an aid to justice. Either side in a case can obtain as authoritative expert testimony as the other. It's merely a question of fees. And the expert, without deliberately lying, nevertheless feels the necessity of so coloring his testimony—a perhaps commendable spirit of loyalty impelling him—as to favor his employer. The result is that nearly every case in which medical experts are called degenerates into a farce, each side producing as many "experts" as it can afford, and the "verdict usually going to the side making the greater noise and more thoroughly befuddling court and jury with a hodge-podge of involved technical jargon."

"The old disgraceful conditions," says American Medicine, "are doomed because it has been finally realized that they are standing in the way of justice The bills being prepared for legislative action, all seem to be on the one plan of getting such testimony from a witness called by the court, paid by the State or county, and absolutely independent of prosecution or defense, as nearly impartial as human plans can make it in our present state of imperfection and fallibility. There may be defects in the bills, no doubt there are, but no human action is perfect; but it must be confessed that no better plans have been suggested so far, and that some of the ablest physicians and lawyers have given the subject very serious consideration. The accused and the prosecutor can employ all the experts they desire to help in the conduct of the case, but such men will now be openly acknowledged as hired partisans who cannot occupy the witness chair.

"The proposed laws exclude the partisan expert and, as the court is not presumed to know who are competent, confine the choice to a list supplied by a reputable body, say a local medical society in the case of medical cases. An engineering or chemical society should similarly nominate experts for their particular lines. To eliminate the dangers of officialism and the exclusion of experts from abroad or of new men not yet recognized as expert, there should be provision for the court calling any man jointly requested by the defense and prosecution if it so desires. We presume this will come in time—if not already provided for in the twenty States now studying the matter; but even if there is no such provision, it is no ground for opposition, as the measures are so infinitely superior to the present horrors that every one should demand the early enactment of the bills. Their passage will prevent the miscarriages of justice which have so disgraced American jurisprudence."

Now, then, what is said of medical experts applies with equal force to architectural and engineering dittoes. If involved in litigation you may hire an hundred who will, and perhaps in perfect honesty see the matter your way

and swear to it glibly and prove you're right by the book, the while piling up mathematical, algebraical and precedental proofs. Your opponent can do the same with his experts.

Surely the American Institute of Architects and the Society of Engineers would be willing to help the courts by naming a number of practitioners who have acquired skill and profound knowledge in their branches, and from among whom the courts could then select impartial, unbiased experts, virtually for the time being officers of the court and under oath to treat both sides fairly and from whom real help would be obtained in arriving at real justice.

Let us agitate it.

* * * *

While discussing what might be called a standardization of expert testimony let us glance at another proposed and near of kin standardization, that of materials and of building methods. Much as with expert testimony at law you hardly know which way to turn for really reliable data anent building materials. The concern that advertises the most, proclaims loudest the virtues of its product, is usually the one that carries most weight with the average architect. Insignificant, indeed, must be the manufacturer who has not a "testing laboratory" attached and from which are sent forth illuminating tables of tests and convincing proofs that that is the one thing to use. His neighbor's "laboratory" the while is engaged in showing that those tests are all wrong and these are the only authentic ones, and if the matter bears a fairly imposing signature, and with many C. E. K. S. I. or other equally impressive initials appended to that name, why it'll carry weight.

Ten years ago there was established by the federal Government a bureau of standards. Though it started out modestly enough to but standardize weights and measures, the purpose of its foundation was ultimately to be a help in all things mechano-scientific, a sort of court of last resort, where more minute tests and calculations could be made than anywhere else, and that would lead to the solving and standardizing of what had been largely conjecture in the field of mechanics, physics and chemics. Little by little buildings and appliances have been added and scientists of national fame attached to the personnel. Today the bureau's work is important, it ranks with that done by the great laboratories of the Old World, and is rapidly being equipped to do work no other laboratory in this country can touch. Not only is it working to standardize "standards" here, but its efforts tend in the direction of getting all nations to reduce them to an international basis. A comprehensive and most far-reaching work.

* * * *

At the last session of Congress a substantial sum was appropriated for the bureau to undertake exhaustive tests of building materials. Heretofore, under other appropriations and departments, certain work along that line has been done. But it has been mostly tentative, generally undertaken at the request of this or that government officer or for this or that manufacturer, and for some specific or special end, and has resulted only in approximations "as well as could be done with apparatus at hand," etc.

As things are now, the Bureau of Standards can undertake this work in an orderly and systematic way. We should give it all the help in our power; we should define just what is most needed by us, and in what form it would be the most useful. It seems to me that we should, as representative bodies, the American Institute of Architects, the Society of Engineers and the other associations, ask that bureau to undertake the compiling of a text-book, some sort of loose-leaf affair that could be added to weekly or at other periods, and that

would be a cumulative record of tests, of standardizations of what should be expected of building materials. We now have a hodge-podge of such matter, published by manufacturers. This is good enough to work out by rule of thumb, but our commercial problems have developed to a higher stage, more is expected of us, we have been wasteful of materials to be sure of their efficiency, and we have merely taken what manufacturers have given us.

This bureau should give us, as the pure food people have given us, something to go by—a fixed standard. It should test all kinds of steel, iron, cement, brick, stone, etc., fire, compression, tensile tests. It should tell us all about those things as only it with its perfect scales, furnaces and measures can do. It should establish standard requirements for the different grades of cement, for instance, and it should only be a question of time when its stamp would be as necessary on manufactured building materials as the Board of Underwriters' stamp is necessary on fire appliances, hose, etc.

We need that sort of thing. That is the proper bureau to give it to us. Its possibilities for good are immeasurable. Through it perhaps we may, some day, even standardize our building laws. But, like all things human, it must have support. The architects and engineers of the country can give it that support, a species of moral support and through the latter in turn will come that other support so needed to make any work successful, the necessary appropriations and recognition from Congress.

* * *

To Restore Old Mansions

STATES with histories that run back to the Revolution and beyond it would do well to set aside a sinking fund to be devoted to the purchase of "mansions." New York is now asked to purchase the Schuyler mansion at Albany, which, long the property of the Catholic diocese, will be torn down unless the Legislature appropriates the money necessary for the State to buy it and convert it into a museum. It is a stately house of the colonial era, and crowded with historic associations as the home of General Schuyler. Alexander Hamilton was married in its drawing-room. The descendants of the men of Oriskany want the State to purchase the mansion of General Herkimer at Little Falls. The home of the stout old soldier has fallen into dilapidation, and is a tenement house for Italian laborers who knew not Herkimer. There is a fine monument to Herkimer and his men on the battlefield now, but it is insisted that his house, restored to its original condition, would simply supplement the memorial. Old houses are interesting to this busy generation, and yet when one visits most dwellings once inhabited by notabilities there is apt to arise a consciousness that after all they do not look much unlike the habitations of the John Does and Richard Roes of the time.—Boston Transcript.

* * *

Moral Support

"Every time the automobile breaks down I notice you examine your State license."

"I do that for encouragement. The license says I am competent to operate the machine."

A Novel Reversible Floor

A TWO side-floor is something of a novelty. The views shown herewith illustrate the interior of a Parisian theatre in which the entire floor, mounted on a horizontal axis, can be reversed. This has been done in the construction of the Appollo Theatre, No. 18 Rue de Clichy.

J. M. Auburtin, the architect, was required to design a structure the auditorium of which could be used either as a music-hall, or a ball-room, and which could, moreover, be quickly transformed.

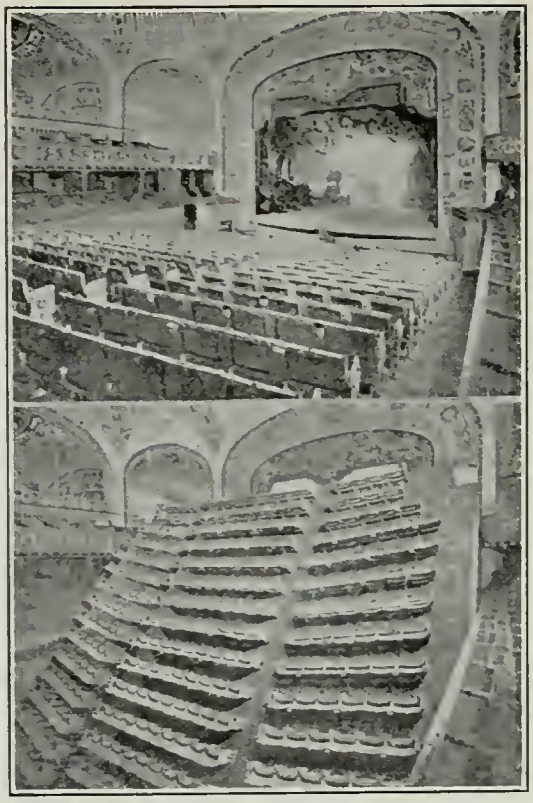


Fig. 1. The Upper View Shows the Floor Arranged for a Theatre. Below is Shown the Floor Being Revolved

The illustrations show how this was accomplished. The floor, built up of steel girders, has an area of about 2500 sq. ft. and weighs 100 tons. The axle parallel to the front of the stage is not in the middle of the thickness of the floor, but at a point near the seating surface. The rotating machinery, is operated by 6 h. p. machinery, and the floor swings through an excavation over 30 feet in depth. When the floor is in position it is fastened with lock bolts.

Fig. 2. Showing the Floor Set for a Ball-r

Note from the illustration that when used as a ball-room, the floor is horizontal and on the same level as the stage. When used as an auditorium the necessary incline, is of course, available.

Lift bridges are accepted construction. Concrete walls are moulded horizontally, and raised into position. This, however, is rather a new departure, and its operation and practical value will be watched with interest.

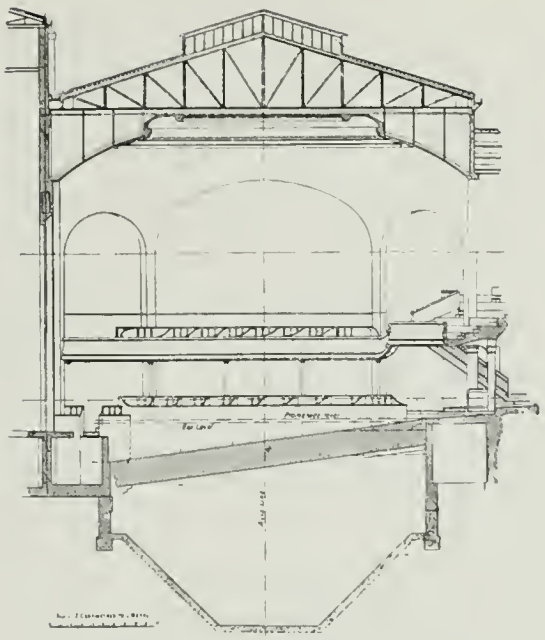


Diagram Showing Operation of Double Floor

Cement Preserves Oaks from Decay

LE CONTE oak, one of the oldest and most picturesque of the stately oaks on the campus of the University of California, which has been threatened with rapid decay through disease, is being saved to the university grounds through the agency of "tree dentistry."

The oak which, according to Professor W. L. Jepson's theory, is anywhere from three or four centuries to 2000 years old, was dedicated to the late Professor Joseph LeConte, who was one of the earliest and most beloved members of the faculty.

When rapid decay was noticed a few years ago horticulturists at the university undertook an experiment to prolong the life of the gnarled and picturesque tree. Under the direction of Professor R. E. Mansell, of the department of horticulture, who is in charge of the agricultural grounds, and with the assistance of E. A. Hugill, a determined attempt was made to arrest the decay.

The diseased portions of rotted limbs were hewn out at their juncture with the trunk and other limbs and after the decay had been carefully scraped away the cavities were filled with cement. The cement was placed in contact with the live tissues and filled to reach just underneath the live bark.

On the LeConte oak there are nearly a half hundred of such cement fillings, and horticulturists are of one opinion as to the benefit derived from the operation. It has proved so successful that numerous other oaks on the campus have been similarly treated and Professor Mansell recently announced that the method has been taken up by horticulturists throughout the East.

One Architect's Method of Dealing with Grafters

SCOTT N. HUGHES gives an interesting account of the life of William Le Baron Jenney, the architect who died recently in California. It is instructive in many ways as to the very perplexing problem of how best to deal with the would-be grafter and briber. A portion of the article is as follows:

Jenney despised worse than anything the grafter, and his manner of dealing with that type of man was effective.

One day Jenney was in his private office when a man who wanted to provide certain materials for a building then under construction came in and approached John Ewen, then a "cub" in Jenney's office, with a flagrant bribe offer. He offered Mr. Ewen $50 if his material was used.

Mr. Ewen was seized with an inspiration. Instead of throwing the man out of the office, he said: "Mr. Jenney always handles that end of the business. Go in and see him." Then he awaited the explosion.

The man innocently approached Mr. Jenney and made the proposition.

"Sit down a moment," said Jenney quietly. A moment later he looked up and said: "Young man, are you new in the business?"

"Yes, sir; I'm just starting. I want to get in right. My stuff is good, and I want a chance."

"Well," said Mr. Jenney, "there are two ways to do business. If you want to do the best kind of business, with the best firms, don't do as you have done today. I have no doubt that is the way to do business with some firms. If you are after that class of business, that is the proper way to get it. But if you want the best business don't approach any one as you have me. I'll give you the contract at your figures. If you can afford to give me $50, you can afford to knock $50 off the price to the owner. Let's reduce your figures $50 and give the builder the benefit."

The man agreed. He learned his lesson well, and he did business with Mr. Jenney for years. When Mr. Jenney died this man testified that it was that one business lesson that made him realize that the only way to do business is to do it straight.

When Mr. Jenney dismissed the man that day after signing agreements he stepped out smiling to Ewen and remarked: "Thought you'd have some fun with me, eh?"

Another and severer lesson he administered to a big contractor down town. This man was prominent socially, financially, and in religious circles, and through Jenney he got the contract for a skyscraper down town. One day, while the building was in course of construction, he entered Mr. Jenney's office and handed him a check.

"What's this for?" asked Mr. Jenney.

"It's the usual 10 per cent of the first payment—your share," he added, significantly.

Mr. Jenney took the check, chatted for a time with the man, and finally went out into the workroom.

"What's the amount of that contract?" he asked Mr. Mundie, his partner. Mundie told him.

Jenney figured for a moment, muttered, "Yes, the amount is correct," and then he retired to his private office and endorsed the check over to the owner of the building.

Nothing more was heard of the matter until the end of the month, when the crooked contractor received from his bank a check endorsed both by Mr. Jenney and the owner of the building.

There was nothing for him to do but to take his medicine. He appeared in Jenney's office, probably expecting to be flayed for his tactics, but nothing of that sort happened. Mr. Jenney remarked:

"I am extremely glad to know that you can afford to make the lowest bid on a building and give the owner 10 per cent back and still make money on it, but don't you think it would be more business-like just to subtract 10 per cent from the total contract price and save all this red tape by sending the check to me and having me endorse it over to the owner?"

The contractor humbly admitted that it was.

There was not a word of condemnation or reproof, and only a few who learned of it from the owner ever knew of the occurrence.

Mr. Jenney did not cast out that contractor, but continued to do business with him. And when Mr. Jenney built his own home he gave a contract for part of the material to this man—and the man skinned him.

*
* *

Glenn Brown on the Grand Canyon

GLENN BROWN, secretary of the American Institute of Architects, which held its annual meeting in San Francisco last winter, has penned with characteristic picturesqueness his impressions of the trip through the Grand Canyon en route to California. The effusion is printed in the Journal of Proceedings published by the institute, and is given here in full:

The Canyon of the Colorado is vast, silent, mysterious, beautiful.

Vast, its beginning and end beyond human vision arouses the imagination to thoughts of infinite space. Its distant peaks and cliffs recall the imagery of dreams. Its depths visualize the enchanted lands of romance and story.

Silence, impressive, solemn, eternal, reigns over the valley, no living thing gives voice to interrupt its solemnity, no sound interferes with the power of its inspiration. It leads our thoughts to contemplate the satisfying quiet of the great unknown.

Mystery plays among its pinnacles brilliant in the sunlight, lurks in its valleys lost in the shadow, enchants with its magnificent harmony of color. In its precipices we see mysterious walled towns, castles with their towers, ramparts and moats, cathedrals with their spires, pinnacles, domes and minarets; vast amphitheatres with tier upon tier of classic seats all glorified by the glamor of a perfect atmosphere, enhanced by varied color, light, shade and shadow. Silent, deserted we obtain a reincarnation of a forgotten past, or behold a vision of a future world.

Beauty entrances in the play of light and shade, in the mystery of the shadows, in the wonderful colors. A magnificent color scheme unrolls, glistening whites, mild grays, sober greens, tender pinks, brilliant reds, dark browns, delicate yellows, regal purples ever changing with the progress of the sun and with the shifting shadow of pinnacle, cliff and cloud, always in harmony and ever increasing in charm and mystery.

Memory retains impressions of the brilliant light playing over the canyon fascinating in color and bright in contrasting shadows; the sunlight leaving the valley to mysterious shades; the gray veil creeping over the chasm revealing unseen caverns and recesses; the pinnacles reflecting the sun's rays fading into the purple haze; the progress of the shadows deeper, deeper more mysteriously quietly, slowly, awsomely enveloping the wondrous scene as it passes into the blackness of impenetrable night.

Some Historic Conflagrations

FIRE, as well as war and diplomacy, has played its part in writing in destruction and construction of the history of the world; for while the immediate result of fire is destruction, the final effect is sometimes construction, bigger, better and more enduring edifices arising on the site of the ruins. Nobody can deny that the Chicago fire was the turning point for its greatness, and that without the fire Chicago would not be the Chicago of today. New York, Boston, San Francisco and Baltimore likewise have been benefited by destructive fires.

Fire, then, is constructive when it roots out the old wooden rookeries which bar the way to beautifying and improving a city, and, while generally a conflagration is destructive only, we must give it credit for the little good it sometimes accomplishes.

But most great fires of history were destructive more than constructive, and the loss of life in some of them was appalling.

In the first fire of Moscow—for that city had to suffer twice from the same scourge before they learned their lesson—there were over 200,000 victims. Consider for a moment what that means! One fire in one city at the early date of 1570, when cities were not anywhere nearly so large as they are today, snuffed out as many lives as there were people in Minneapolis in 1900, or almost half as many as there are in the whole State of Rhode Island at the present time.

The Moscow authorities profited by the lesson of the first fire sufficiently to provide means of escape in case the conflagration was repeated, but they failed to grasp the idea that if the buildings were made fireproof both lives and property would be safe. The result was that in 1812 they were visited by another destructive fire, which destroyed 15,500 buildings, but not enough lives to make it worth while recording in a country where life is held so cheap. No doubt there were some fatalities, for a fire covering such a large area could not rage without the probability of some victims.

London was the second city of the world to suffer a great fire loss. In 1666, over a century before the Declaration of Independence was signed, the city was swept by flames, destroying 13,200 houses.

Following closely on the second fire of Moscow a disastrous conflagration raged at Cairo, resulting in the deaths of over 4000 people. That was in the year 1824 and was just six years before the great fire of Constantinople, which destroyed block after block of buildings, amounting in all to 18,000 houses.

Large historic fires have followed in quite rapid succession since the second Moscow fire. The dates and the loss suffered are here presented in tabular form to show at a glance the price we pay to fire, which when under control becomes our servant, but uncontrolled our master and scourge:

NOTABLE HISTORICAL FIRES

Year.	Place.	Loss.
1570	Moscow	200,000 victims
1666	London	13,200 houses
1812	Moscow	15,500 houses
1824	Cairo	4,000 victims
1831	Constantinople	18,000 houses
1835	New York	$30,000,000
1842	Hamburg	$36,200,000
1851	San Francisco	2,500 blocks
1871	Chicago	$165,000,000
1872	Boston	$75,000,000

Residence of Mr. J. W. Hollister, Pomona, California
Robert H. Orr, Architect

'Mid Southern California Orange Blossoms

HOW often we think of those massive buildings in large cities when the greatest of professions, architecture is mentioned.

Not many architects are willing, when they feel their competency, to expend public and private funds with the responsibility for architectural and economical results, to hedge their possibilities by beginning an architectural practice in a small city of 12,000 inhabitants and expect a practice that would justify one who has spent many years in training and preparation in bringing out that which is within the heart and which ever beckons one on to seek larger opportunities and a broader field of activity; yet after all many are the architects that look to the smaller cities for much of their architectural practice, for there unhampered by expensive lots, libraries, schools, churches, clubs and the root of the nation, the home, are laid out amid flowers and trees—an object of pride to the public eye of that community.

Reared in the school of experience, the work-shop, with half a score of years as a draughtsman, rounded out with an academic training in one of our great colleges, Robert H. Orr chose for his field of practice the fair city of Pomona and sister towns nestled in a sun-bathed valley amid beautiful orange groves some thirty-two miles east of Los Angeles.

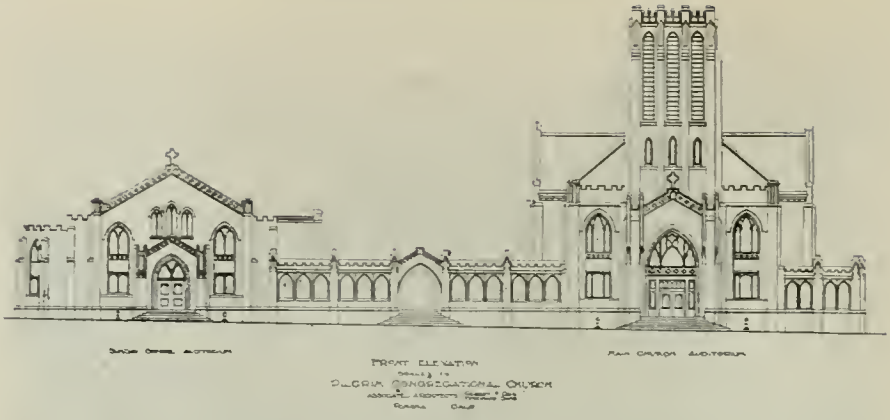
This was in July, 1908. Pomona was just then awakening from a long period of building inactivity. As if by magic homes began to spring up as mushrooms in a night. With the coming of the home, for Pomona and surroundings possess a people of culture, refinement and means, who have come to make home the principal object of life's attractions, came the demand for larger and better churches, more schools and lastly, commercial interests are awakening to the need of better and more artistic places to conduct their business.

Competitive Design for Kern County Court House
Robert H. Orr, Architect

Design for San Dimas Christian Church
Robert H. Orr, Architect

Residence of Mr. F. J. Martin, Pomona, California
Robert H. Orr, Architect

Residence of Dr. C. W. Johnson, Pomona, California
Robert H. Orr, Architect

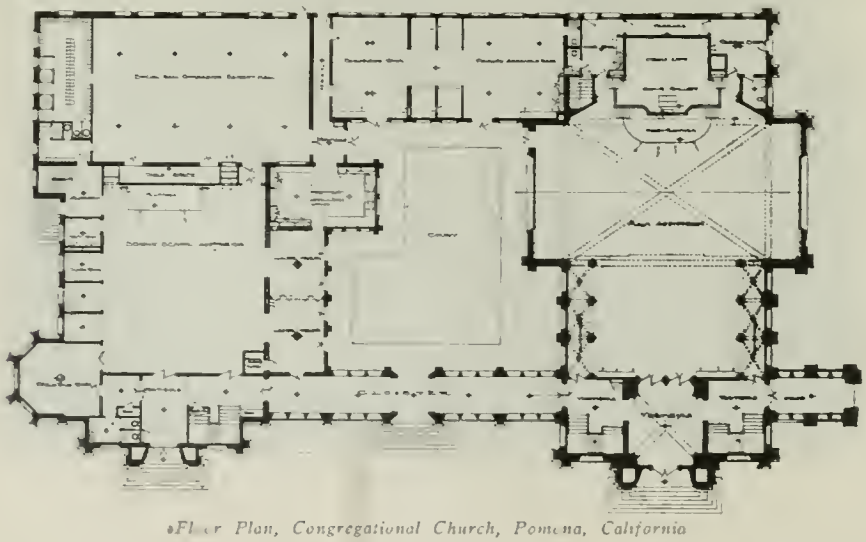


Congregational Church, Pomona, California
Robert H. Orr, Architect, Ferdinand Davis, Associated
Iron Work by Pomona Mfg. Co., Inc.

Mr. Orr's first commission was the Christian Church, certainly an innovation in church architecture, the building of which was watched with keen interest. It is a brick structure faced with cream pressed brick. It has a full basement, which is devoted to Sunday-School and social work. The two auditoriums on the main floor are combined and have a seating capacity of 1200 persons. It is, indeed, a modern work-shop for Bible School work and one of the best in the South.

With this achievement for local talent, Mr. Orr and Ferdinand Davis, associated, prepared the plans for the Congregational Church now in course of construction. This plan is unique, an institutional church built upon broad lines. It consists of a Sunday-School chapel, primary and beginners quarters, a gymnasium, boys' club rooms, social parlors and a church building built with brown brick and stone trim, a credit to any city. An open court enclosed by cloisters is one of the attractions of this plan.

With this as a nucleus, the San Dimas Christian and Ontario Congregational churches, the latter not herein illustrated, were designed by Mr. Orr.



Floor Plan, Congregational Church, Pomona, California

The Times Building, Pomona, California
Robert H. Orr, Architect

While churches were being planned and built, schools also were receiving special attention. The Board of Education commissioned Mr. Orr to design two large grammar school buildings and a sloyd building. The Hamilton Boulevard and Garey Avenue grammar schools are the best in Pomona. Built of brick, they each contain nine well equipped classrooms, a kindergarten of two rooms, sewing and cooking rooms, sloyd with library, principal's office and rest rooms.

The Claremont high school, a magnificent building with polytechnic features, is now in course of construction and will be a model for completeness in detail and efficiency.

The Times building, a neat two story pressed brick building, the home of the Pomona Times, has an interesting classic facade.

The State Bank building is partly remodeled and part is new; it is well adapted to commercial use and office purposes.

In nearly all architectural practice the residence is a prime factor. The designs show a varied architectural treatment, both in materials and conception.

The home of Dr. C. W. Johnson, built in an orange grove, of speckled granite boulders washed down from the mountain side, is a type of construction much used in the foot-hill section.

Plaster exteriors illustrated by the homes of J. W. Hollister and F. A. Averbeck are just beginning to be used extensively in this locality. Note the rich appearance of the plastered plancier on the Averbeck residence.

The prevailing style of the South shown by the home of F. J. Martin and the dignified colonial home of W. H. Graham are, indeed, home-like and have an air of spaciousness and comfort.

With the Contractors

General Contractors Association

(INCORPORATED)

402 KEARNY STREET

SAN FRANCISCO, CAL.

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More About the New Lien Law

By WM. E. HAGUE, Secretary

AT this time a few words regarding the new lien law which has just become effective, may not be amiss.

When the law was under discussion, prior to its passage, a protest was made against its adoption by the local organization of architects, and I hope to be able to show that this action was ill-advised, and that no one class will be more largely benefited by the change in the law than the architects, for under it the architect will not be obliged to assume the responsibility of construing the statute as to matters wholly foreign to his calling. Nor will he be subjected to the humiliation of having his office used as a clearing-house for swindling operations on the part of either owners or contractors. In preparing his contract and specifications he now need only to see that they contain what is necessary to bring out clearly the work that is required to be done under same; he need no longer worry about conforming to artificial, formal requirements designed for a different purpose.

The truth is, that this law is but another step to that general movement which has been slowly gathering force for some years, tending to do away with worn-out laws, behind which schemers can work to pluck the innocent and the unwary.

The "legal mind" is prone to argue that the sub-contractors on a building should not furnish material or do work for a contractor unless he is a man who pays his bills, any more than a merchant should furnish cloth to a tailor who does not pay his bills.

The assets of a contractor are not always of a very tangible nature, because his working capital is always tied up in pay-rolls and sub-contractors' bills upon the work he has in hand, and only by investigation of his past record in the business and present standing, can the owner properly determine his responsibility.

The trouble in the past has been that the owner has usually let the contract for the construction of his building to the lowest bidder, without regard to his standing or responsibility, and has taken no care or thought about the laborers and material men getting their pay, and the "pro rata" man in the past has been able to get contracts which, under the added responsibility of the owner, he will have difficulty in securing.

The substance of the new law is the extension to all sub-contractors and material men of their right to retain their interest, and to follow that which is their own into a building until they are paid for it. Is there anything wrong about that? Or anything that should cause lawyers, bankers and other estimable citizens to lie awake nights from nervous apprehension? There is not even anything new about it. Neither is it new in this State, where it was working well, and was even expressly held to be constitutional until some opinionated members of the Supreme Court set their individual ideas of public policy above those of the legislature.

It is merely a recognition of the undeniable fact that in the case of building operations the law must necessarily intervene to prevent the swindling of the numerous laborers, sub-contractors and material men on a building.

The new law aims to make the statute consistent with itself, and to bring it into harmony with the Constitution, to simplify both the statute and its workings and to put the building business upon a stable and legitimate basis.

The lien law as in force in this State from 1885 to 1911 was a patchwork of two fundamentally different systems, i.e., the "Pennsylvania System," which is that of a direct lien upon the property improved for the value of the work and materials used therein, and the "New York System," which is that of an indirect lien operating on what is left of the contract price in the owner's hands.

In 1868 the legislature of this State passed an act which, in most of its essential features, was the same as the act which has just become a law. It provided for the direct and absolute lien according to the "Pennsylvania System," and worked admirably, and the litigation under it was comparatively insignificant. The lien laws of the States of Washington, Oregon, Arizona, New Mexico, Montana, Wyoming and numerous other States, are similar to that of our new lien law, and have been thoroughly tried out and upheld by the different Supreme Courts of these other States.

By giving back the simple direct "lien upon the property" for the value of the work and materials added to it, and thus harmonizing the statute with our own new Constitution, and at the same time making it

to accord with laws elsewhere universally prevalent in the Pacific States and Territories, it is hoped that a great public service has been rendered by the legislature of 1911.

Under the new law the owner and architect need use only the common-sense business judgment and ordinary proportions which the nature of the transaction and the amount involved naturally suggest to any man of ordinary business prudence. In selecting a tenant for his property, for example, an ordinarily prudent man will consider the business and financial standing of the person applying for a lease, his reputation for honesty and efficiency and his apparent ability to live up to the lease, and will also generally take security for performance in the shape of a chattel mortgage or a guaranty on the part of responsible persons that the rent will be paid.

So, likewise, in selecting a contractor for the improvement of his property, the owner and architect should take the same precautions. They will be much safer than under the old law, for the absurd statutory requirements of the old law, and the uncertainty of the decisions construing them, will no longer be a factor in the problem.

If they have selected a contractor of financial responsibility, with a reputation to maintain, they need not dread having to pay liens for the value of everything that goes into the owner's property, for the contractor is now made fully answerable for any difference there may be between the amount of the liens and the contract price, and if, through some intervening misfortune, the contractor has become irresponsible the fullest and amplest remedies are provided against the sureties on his bond.

The only danger that seems to exist in the new law lurks in the features which were insisted upon by the Senate committees, namely, the "50 per cent bond" provision at the end of Section 1183 and the "Notice of Completion" clause at the end of Section 1189. These clauses may have the effect of complicating the administration of the law, and may therefore prove dangerous.

If the owner, for example, exacts the 50 per cent bond he will, in case his contractor proves irresponsible, be obliged to require all claimants to file liens, to bring foreclosure suits thereon and to undergo the delays, vexations and expense of a complicated consolidated action to determine and distribute the aggregate amount equal to the amount found to be due from the owner to the contractor. Long before he reaches the end of this and pays his lawyer his fees for attending to all these complicated proceedings, he will wish he had relied on the plain "common-law" bond, had paid the lien and sued the contractor and the sureties for the difference, if any, on their bond, just as he would upon a promissory note.

So far as building bonds are concerned, the statement made recently by the resident manager of one of our largest surety companies indicates what will be the effect of the new law. He said: "When a job is abandoned in Oregon we do one of two things at once. We either finish the building or else settle with the owner for his damages. In California we send for our lawyer."

That the new law will have a strong tendency to put the building business upon a stable and legitimate basis is the belief of its advocates, the contractors. That the business is now utterly demoralized is a matter of every-day observation on all sides. The former law has been the principal factor in bringing about and continuing the deplorable state of affairs; and any law which has a tendency to elevate the business cannot help but be of assistance to the owner and architect.

The writer is indebted to Alex. G. Eells for much of the foregoing remarks. Mr. Eells for many years has been considered one of the ablest lien-law attorneys in this State, and was employed by the contractors to draw up the bill which has now become a law.

The fact that the General Contractors' Association, numbering some 140 of the most responsible general contractors doing business in this city, supported the new law and worked for its passage, is good proof to the architect and owner that the responsible general contractor, in seeking to elevate the business, aims to legitimately protect his sub-contractor and material man from the irresponsible man, who has done so much to bring about past conditions and demoralized the standing of really responsible general contractors. The stockholders of the General Contractors' Association represent a responsible class of general contractors with whom it will be safe for the owner and architect to enter into a general contract for the construction of a building. The fact that a majority are large property owners in this city gives to the owner and architect the security to which they are entitled.

In the period of great activity following the fire many irresponsible men came from the different parts of this country, secured two or three contracts and received two or three payments upon those contracts, and then left the town with bills owing on every hand. The architects and owners of this city can easily protect themselves under the new law by securing a contractor who has been in business here for some years, has property and a reputation at stake and has shown his responsibility. San Franciscans should boost for their town as never before, and if the architects and owners will be careful to select a responsible general contractor for their work, they will have no difficulty under the new law. A salient feature of this new law is the fact that whereas the bond of a surety company in times past has proved very little security and protection to the owner, it will now be a dollar-for-dollar bond as good as a promissory note. What more protection could the owner and architect desire? A law which makes the surety companies responsible and protects the owner surely cannot fail in its object.

* * *

The Trouble with the Builder's Business in San Francisco

By GEORGE E. BURLINGAME

THAT the San Francisco building industry is not now what it ought to be, either in net results to the owner or in net profits of cash and conscience to the contractor or architect, scarcely any one will have the temerity to question. Why it is not is a pretty involved story, but among the confusion of lesser reasons there are some that stand out in a very prominent and tangible way.

Many of the most prominent reasons gather around the element of estimating. Let us consider a typical job of say $30,000. There is in this job excavating, concrete, brick work, lumber and carpenter work, mill work, stairs, roofing, sheet metal, structural iron, ornamental iron, electric wiring, plumbing, plastering, painting, glazing, and heating—sixteen different contracts, not to mention such incidentals as patent flues, waterproofing, tiling, marble and terrazzo, mantles, fixtures, shades, hardwood flooring, art glass, elevators, sidewalk lights, and other specialties. If there are as few as six general contractors estimating, and each general contractor takes

a conservative average of three sub-bids on each sub-contract, the job will pass through the hands of fifty-four persons, and calls for the expenditure, directly and indirectly, of 150 to 250 hours' labor. This is what is required of the building industry for every average job that proceeds promptly from the draughtsman's pen into actual construction. Perhaps this is a legitimate and necessary feature of building as it is now conducted. Perhaps the unproductive waste of reasonable competitive figuring is compensated for by the greater energy and application that straight contracting produces in a man. Perhaps it is not a legitimate and necessary feature, and that the same results can be reached in a less wasteful and otherwise harmful way. However that may be, present day procedure does not stop with reasonable competitive figuring.

I have in mind a recent statement of an architect's office that from general and sub-contractors more than 250 bids were received on one job. This, furthermore, is to say nothing of the number of sub-bids represented by the fifteen or twenty general contractors who figured the job as a whole, or the number of preliminary figures and the refigurings the job received between the time it was first conceived and the time it was let. It is a very modest estimate to say that at least 1600 hours' time was consumed in the figuring of that job, using up a productive capacity approaching $2000. Every dollar of this is a donation to this particular project. Every minute of this time is a gratis contribution by the men who did this estimating.

This is unfair to contractors. But it goes beyond being unfair to contractors; it is a positive menace to the building industry and a dead weight upon the advancement of the community. It is competition gone mad. It is riotous extravagance. It is insane absurdity. It is blind and witless and barbarous panic. The good of the whole community suffers seriously for this prodigal waste.

If a man gets only one job out of every twenty-five he figures it means that the twenty-fifth job pays for the figuring of the other twenty-four. You may say that a man makes less profit on it than if he got one job out of every three that he figured, and deny by this that this job pays for figuring the others. But it does. The contractor's profit and prosperity depends upon the jobs he does, and not upon those he figures, and upon his profit and spending capacity, which is representative of the spending capacity of all his competitors, depends the community's prosperity and the business prosperity of this owner.

The great majority of men are fair-minded. They do not expect to get something for nothing. They expect and desire to pay a legitimate living price for legitimate honest service. But present witless methods conspire against such a possibility. They encourage a few conscienceless individuals, who are willing to turn heaven and earth to gain a competitive advantage, to set a competitive pace that, however distasteful to them it may be, the majority are compelled to follow, and business degenerates first into a frank brigandage, and from that into a free fight with discretion and decency scattered to the four winds. And financial prosperity becomes purely a matter of shrewd cunning and the limit to which a man's conscience and a blunted public sense of what is to be tolerated will let him go.

Contractors have themselves contributed most freely to this condition. They have been guilty of beggarly folly in their estimating. Most owners have not the slightest realization of the enormous labor connected with estimating; they do not know that this labor under present conditions exceeds, in many cases, the labor of designing, and contractors are frankly and solely to blame for the exploitation of this element of their business

because they have been willing, yes, they have been falling over each other for the chance to prostitute it without limit. Architects, too, are not without blame.

This much can be said, however, they haven't walked into it deliberately. If you ask a responsible architect or a responsible contractor why he is not guiltless of the practices he himself condemns he will tell you frankly it is a matter of self-preservation. A man might have hated to carry a gun and to be compelled to use it, but he would have stood a small show in the frontier camp of '49 if he had not done it.

Every contractor is familiar with the experience of having a prospective client point out to him a half dozen buildings that through trick or deliberate misrepresentation are reputed to have been built for 20 per cent less than he knows the work can be done for and done right. Every architect knows that his client can get any one of a dozen of his competitors to declare that a $100,000 plant can be put up for $60,000, and he knows that unless he secures in some way or another the appearance of a similar comparative proposition his client is going to be dissatisfied, his professional reputation injured, and his business suffer. To save himself he puts on the soft pedal, turns his head, closes his eyes and stuffs cotton in his ears and proceeds to use the competitive methods he doesn't believe in, and as a result we have 250 bids on one job.

From self-protection by gun play our pioneers developed a self-protection by reason and decency, and this is the next stage of development in the building industry.

We have allowed an abnormal and unnatural condition to grow up in the business until we have reached a point where moral indifference and the failure to call a halt has put business on a very ragged edge.

We need a new grip, and to get it we must have a new and broader insight, a new vision and a new adjustment of our mutual understanding of what a square deal to ourselves, our competitors and our clients consists of. There is a rational, obvious, common-sense way of going about it, and the first step is to get together and talk it over. This will help immeasurably. We have begun to do this and much good has already resulted from it. We will continue to do it, and the ideas that are now more or less vague and disconnected will be cleared up and crystallized, and we will be able to proceed in the future with a clearer vision than has before existed in the building industry. The sunlight of discussion is absolutely the best disinfectant and growth promoter ever discovered.

There are at least four essential elements that have to do with the legitimate and efficient conduct of the building business: Architects, builders and material men must get a fair and reasonable—not excessive—price for what they supply; they must get their money when they have fulfilled their contracts; there must be a minimum expenditure of unproductive time and labor; there must be an incentive which will result in greatest possible efficiency in quality and dispatch of the product they turn out, and there must be the greatest possible discouragement of unfair and unscrupulous practices that tend to penalize industry and fair dealing.

Through the efforts that are now being made and by means of the measures now being devised and that will develop as time goes on, the way will be opened to secure to the responsible owner, the responsible architect and builder, and to the community, these sound business conditions which are required for the best good of all.

The importance of the movement by the general contractors, material men and sub-contractors toward bringing into their separate organizations

every responsible man engaged in each separate line is equaled only by the further movement of co-operation among the organizations. It is clearly most desirable that this co-operation should proceed as rapidly as conservatism and farsightedness permits.

In proceeding, however, it is worth while to recognize the particular factors that enter in and have to be contended against. There are, first, those who are unwilling to pull, but are willing to be dragged. In every effort at uplift, whether in industry or anything else, there are always some who are willing that others should do the work, suffer the inconvenience, bear the burdens, take the knocks and pay the bills while they stay on the outside and reap the benefits. They are the men to whom nothing less tangible than a five-dollar gold piece appeals. They are men of circumscribed sympathy and understanding, blind to the larger reward of restraint and foresight, content to snatch up each day whatever comes within their range of vision, irresponsible, temporary, ephemeral. Hypnotized by the dollar, unaccountable wherever that is involved, they are one of the most formidable stumbling blocks to progress. This is one element that has got to be pulled against.

Then there is the unscrupulous general contractor to whom business is purely a matter of mulcting. He is not in the business to put up houses or to contribute in any constructive way to the building industry. He is there to be on hand when the money passes from the man the work has been done for to the man who has done the work, and by a series of slight-of-hand jugglings with which he is eminently familiar, to sidetrack all the profits to his own pocket while the man who does the work rubs his eyes and wonders how it was done.

There is next the unscrupulous architect and owner, and the only difference between the unscrupulous architect and owner and the unscrupulous general contractor is the trousers that contain the pocket the money is sidetracked into.

The next factor is the careless and inefficient or wilfully unprincipled sub-contractor, material man or workman and whatever influences abet them, who are bent upon not giving the service they are paid for.

These are the highwaymen of the business. They constitute a ridiculously small minority, but true to their freebooter type they are a bluffing, bulldozing variety, and their presence is felt in a marked degree.

But the conservative, peace-at-any-price majority have a habit of saying "hold on!" when things get too bad, and it is really the most commendable habit of the human race. It is right that all responsible men should unite in saying that there is no place in the building business for professional brigands and deadbeats of any type, and that they should unite in putting into operation such measures as will make good what they say. It is right that in this they should have the sympathy and assistance of the best element of the entire community. It is right that practices that have grown up through irrational competition, and which have become an economic burden upon the community, should be corrected.

The time must come by dint of inevitable progress when figuring will be given its legitimate place in the business, when near investors, who are bent upon bleeding every source possible of skill and attention to which they have no legitimate right, will find that they are expected to pay for the contractors' time required in estimating their visionary schemes; when the burden of this extravagance will not be borne by bona fide investors; when level-headed industry and practical farsightedness will be encouraged and endless figuring and refiguring, segregation, dickering and jockeying

of figures will be thoroughly discountenanced and remain only in the remembrance of an unsavory past. The time must come when responsible contractors and architects will not be driven into competition with illegitimate and irregular methods; when responsible men can get a living price for doing first quality, conscientious work, and know they will get their pay when the work is done and when every element engaged in the work can feel a like positive assurance of full compensation for capable and efficient effort.

This must be brought about by the co-operation of every sound element affected, from the ultimate investor down to the man who drives the nails, and it is indispensable that all responsible men join with and assist those associations that are organized for this purpose.

The building industry has got to be placed upon a higher plane than that of lottery gambling or of ward politics if it is to prosper and be prosperous to the community. Competition has got to come out of the mire of bid-peddling, job-skinning and pro-rating, collusion and manipulating, trade favoritism and all unhealthful domination and influence. It must be brought upon the plane of skill in handling, competence in directing, knowledge and excellence in workmanship, efficiency of office methods, elimination of overhead wastes and general clean financial procedure.

* * *

Cost of Concrete Houses

WHAT is to be regretted in the development of concrete for house building, is a seemingly erroneous idea as to cost. A "poured concrete house" at a remarkably low cost caught the fancy of the American public, and it seems as though everybody wants a concrete house, and—which is to be regretted—that they want it for next to nothing. When constructing engineers will make a specialty of house construction, fully equipped with interchangeable form outfits (either metal or wood) and when standards have been more fully established, the very low cost concrete house will come.

It will come, but an earnest and united effort is necessary to bring it about. As Professor Woolson said in his discussion of concrete as a fire-resisting material, we can only continue to patiently labor along lines we know to be right. The campaign of education, the change for the better of building requirements, and a better knowledge of concrete and its handling will bring to us a more economical structure.

In the meantime it is best not to make any claims about concrete for residence purposes, especially as regards cost, that are not based on actual experience. The problem of the small house at a low cost is for the mechanical engineer to solve. Concrete itself, plain or reinforced, is, per cubic foot, a low-cost material. Equipment will be designed embodying forms which are readily adapted for any position, and methods of running concrete much cheaper than at present; or, as is being done already, factories or stone "foundries" at centrally located points, will deliver units for speedy and economical erection.

We believe in concrete. It is taxing our American skill and ingenuity to keep up with and apply its wonderful possibilities. In the meantime, the concrete house is low in cost, comparing more than favorably with any other construction, and offering the best value for money expended, but it is not "miraculously cheap," and any attempts to make it appear so, only harm its use.—Cement Age.

The Paint and Varnish Question

H. T. JAMES, general manager for the Bass-Hueter Paint Company of San Francisco, Los Angeles and Portland, gave an interesting talk to the members of the San Francisco Architectural Club in July on the paint and varnish question. Mr. James spoke of the difficulty of the architects in having their specifications carried out, due to the opportunity for deception and fraud frequently practiced by the irresponsible contracting painters. He suggested that it would be far better wherever possible, to have the painting and finishing contract a separate one, rather than have it included in the general contract.

He said, in part: "Where the painting and finishing contract is made direct with the painter, the architect better controls the situation. Furthermore, when the painting and finishing contract is included in the general contract, the principal contractor is liable to sub-contract with an irresponsible, and the cheapest painter obtainable.

"The development of the paint industry in the United States has made a decided change as to exterior painting, and the old-time method of specifying and using pure carbonate lead, linseed oil and turpentine, has been superseded to a great extent by the use of scientifically manufactured mixed paint.

"Very few, outside of the large paint manufacturers, actually realize the magnitude of the mixed paint business. Statistics compiled for 1905 for the Paint Manufacturers' Association of the United States showed that ninety million gallons of mixed paints were manufactured and marketed. Statistics compiled for 1910 showed that there were over one hundred million gallons of mixed paints manufactured and marketed—virtually one gallon to every man, woman and child in the United States.

"The development of the mixed paint business has been due to the fact that it has been demonstrated that a scientifically manufactured mixed paint, properly applied, is far more efficient than a building protected by two or three coats of strictly pure white lead and linseed oil.

"Progressive manufacturers are producing ready mixed paints which show, under the widest range of conditions, good hiding power, adhesiveness, permanency of color, relatively high imperviousness to moisture, proper elasticity to prevent scaling or cracking, and freedom from chemical action, which results in checking or excessive chalking. This product, however, cannot be attained by the use of any one pigment in linseed oil. It matters not whether it be pure white lead, zinc or sublimed lead. Seventy years ago we had only one white pigment to depend on—carbonate of lead.

"In order to conform with the requirements as mentioned, a proper percentage of the various pigments should be used, which united, will tend to correct each other's faults, and thus produce a durable paint coating of maximum efficiency. This refers to the white pigments containing only a small percentage of tinting material. The tinted paints, or the pigment portion of a paint for use on barns, or farm buildings, or for trimming purposes, composed of properly selected oxides, or other colored pigments, is an entirely different proposition, and will withstand exposure to the atmosphere far better than any white base used alone. As a matter of fact, practically all shades or tints made upon a good white base, through the use of permanent tinting colors will withstand exposure better than the white paint alone. This is a matter to be considered in the selection of the color for a dwelling, or other structure, and depends largely upon the judgment and taste of the architect.

"Referring to permanent tinting colors, reputable manufacturers use only strictly pure colors and tinting materials that they know are the most permanent in color. Outside of the chemically pure greens and yellows, ochres, reds and blacks are used extensively. The painter can produce with ochre, red and black, any desired shade that doesn't contain greens, yellows and blues. The difficulty is that in the majority of cases the painter uses adulterated ochres, reds and blacks, and has no knowledge either scientifically or practically, as to the result, or if he combines zinc with his white lead, doesn't add the proper proportion.

"On new exterior work as a rule, his argument is that any material is good enough for the priming coat. In other words, he builds the poorest possible foundation that sooner or later makes trouble and expense for the owner.

"Dependable white pigments are pure carbonate, or corroded white lead, zinc oxide, sublimed lead and zinc lead. Zinc oxide is produced by oxidation of zinc ores, and is extremely fine and very white. Sublimed lead is produced by virtually the same process, and is a very valuable pigment when used in connection with corroded white lead or zinc oxide. By combining the proper proportion of zinc oxide with white lead, or with sublimed and white lead, a paint is produced of far better wearing value than can be produced with either white lead or zinc oxide used alone. The proportion of zinc oxide can be varied from 20 to 33 1-3 per cent—this paint designed for exterior use.

"Accepting as a fact that the reputable paint manufacturers of the United States are producing for various purposes the proper paints, it is after all, a question of vital importance to have the material applied by skillful, intelligent and honest mechanics. Many failures are recorded where the blame has been placed upon the paint, whereas, the real responsibility rested upon the painter's lack of knowledge. The paint on a building properly painted with a scientifically mixed paint, will never have to be burned off.

"The paint manufacturers of the United States have, during the last four years, erected in various parts of the United States, test fences, showing result after exposure, of innumerable combinations that have absolutely determined how a scientifically prepared mixed paint should be made."

Mr. James then showed samples of wood that had been exposed for three years, photographs showing result of these tests, and gave a general explanation as to the manufacture of various white pigments.

"One of the largest consumers of paints in the country," continued the speaker, "is the Pennsylvania Railroad System. They consume in the neighborhood of $1,000,000 worth per year. They employ a paint chemist and he receives probably the highest salary of any chemist in the United States. He has demonstrated practically and scientifically that the proper combination of zinc with white lead, or the proper combination of a certain percentage of inert matter with various white pigments, means a decided improvement as to efficiency, and a saving as to cost. By inert matter, we mean barytes or barium sulphate, silex or silica, whiting or calcium carbonate, gypsum or calcium sulphate.

"Exposed exterior metal work should never be primed with white lead, and if a priming coat of red lead is used, particular attention should be paid to the method of application. In other words, pure red lead should be mixed with raw linseed oil, a small portion only mixed at one time, a sufficient quantity for consumption twice a day, and should be kept

thoroughly stirred during application. All rust of every description on metal work should be absolutely removed.

"The same rule applies to interior painting, as to that of exterior, and the paint manufacturers have demonstrated that certain pigments for interior use are far better than using white lead. As a matter of fact, the old countries, particularly Germany and France, have used very little white lead for many years. There has been discovered a product called lithophone, a white pigment produced by precipitation, consisting of zinc sulphate and barium sulphate. It is virtually useless for exterior work, but for interior work, combined with zinc and a certain percentage of inert matter, it produces an ideal base for paints, either for woodwork or walls. On exposed interior iron or metal work, no white lead should be used. The various flat wall finishes on the market are all manufactured from lithophone, zinc and a percentage of inert matter, ground in a heavy oil and thinned with volatile spirits.

"Exposed interior metal work, iron work, etc., if primed with red lead should be painted as mentioned for exterior work. The priming of red lead, however, is not necessary, provided all rust is removed, and the surface is coated with the proper white pigment containing no white lead whatever. As a matter of fact, no white lead should be used in coating iron work, and it can be eliminated altogether on wood and wall work, and a better result obtained. This also applies to every description of interior enameled work, whether on walls or wood work."

Referring to the matter of varnishes and interior finishes, Mr. James explained the manufacture of varnishes, displayed samples showing various finishes, and impressed upon the members present the all-important fact that too much care could not be taken as to the first coat of material applied to new woodwork.

"In other words," said Mr. James, "the filler, or first coat, should be composed of a tough, durable varnish, containing no resin whatever, as this means the foundation for succeeding coats, and it matters not whether a high-class architectural finish is used or not, over a bad foundation the result will be disappointing. This applies particularly to redwood that shows rough usage, more than either pine, cedar, cypress or other close-grained woods."

He brought up the question as to the ability of the Pacific Coast manufacturers to compete with the Eastern and Middle West—quality and price considered. He said: "This can best be illustrated by referring to the large percentage of business secured by us from the army and navy in competition with the Eastern and Middle West; this on a basis of conforming with specification and chemical tests."

He stated that it cost the Pacific Coast manufacturers relatively less to land the raw material than it does for the Eastern or Middle West manufacturers to land their manufactured products.

"It is a question of comparative cost of manufacture, and from an intimate knowledge of the situation both in the East and here," he stated emphatically, "the cost here is relatively less, and we appreciate an opportunity at all times to make comparative tests whenever other goods were specified, or theirs specified in connection with that of a competitive paint or varnish."

Mr. James dwelt on the matter of home industry, and the good work that was being done by the Home Industry League, and earnestly solicited the co-operation of the Coast architects. He stated that at any and all times they would be glad to co-operate with them, furnish samples, specifications, etc.

Giving a Glimpse of the Structural Work which Supports the Glass

A Classic Conservatory Built Almost Entirely of Plate Glass*

By JOHN VAN DER ZEE SEARS

PLATE glass has long been in use, but mainly for store fronts, show cases and similar purposes. Since the introduction of machinery has facilitated the process of manufacture, this use has been gradually extending, the latest advance in this direction being the adoption of the material for the construction of plant houses and conservatories. It is, evidently enough, the ideal agent for the protection of vegetation, but, partly because of its high cost, this ideal has not heretofore been realized. It has remained for modern architects to demonstrate that this ideal could be made practicable. It required faith and courage and persistence to overcome the opposition, which a marked innovation always awakens, the conservatory builders, nearly all experts, and many contractors being hostile to the new suggestion, but the architects, sure of their ground, won out in the end, securing a commission which resulted in the construction of a building on an entirely new plan, which is evidently destined to be the model of the conservatory of the future. They were not long in finding a firm of builders progressive enough to adopt their plans and skilled enough

*Illustrations by courtesy of American Suburbs.

Conservatory for Mr. Alfred B. Burk, in which Plate Glass is Employed — *Simon & Basset, Architects*

to give them admirable execution. In the prosecution of such work, the intelligent co-operation of the builders is of quite as much importance as any part of it, and particularly is this true where new and perhaps daring ideas are to be developed.

This commission was accorded by Alfred E. Burk, of Philadelphia. The building stands on a terraced elevation above a parklike enclosure which is laid out in walks and suitably decorated with shrubbery. The ground plan of the structure occupies a space of one hundred feet by thirty feet, though its simple numbers and harmonious proportions give it an appearance of much greater extent. Plate glass, as above intimated, is not so costly as it was aforetimes, but that it is not yet a cheap product is witnessed by the fact that on this comparatively small area, a plate-glass plant house has been erected at an outlay of $30,000.

The architecture of the conservatory is in the order of the Italian renaissance; a style suited to the intended purpose, affording a design at once picturesque and dignified. This design has for its most noticeable feature a row of white granite monolithic columns, extending along the entire facade, giving the place a really noble perspective. The simplicity of construction may be understood from the fact that the spaces between these columns are each filled with a single plate of glass. The introduction of plate glass, as the main material in the construction of this model plant house, was a bold departure from established standards recognized by builders, and it was accordingly viewed with general disfavor. It required a departure from the old style of structural work in a great many respects, the plans for which were carefully worked out by the designers, in conjunction with the builders who employed all of their resources to bring about the successful completion of the work.

The breaking of rules and customs can only be justified by success, and it is now admitted that such success has been fully attained in this case. The new kind of conservatory is so great an improvement over all the old forms of protection for vegetal growth that it will undoubtedly be adopted as the typical example to be followed hereafter.

The heating, lighting and ventilating of the building have been provided for with the same intelligent foresight that originated the general plan of construction. In a greenhouse, the heating arrangements are, of course, of the first importance. Of this matter, it can only be said here that after a careful study of the best methods in use, a modified system of steam-heating was decided on, and this decision has been justified by the exceedingly satisfactory results.

The lighting of the building is effected by sixty incandescent globes, installed in the vaulted ceiling. The effect of this diffused illumination, lighting the entire interior in the evening like sunshine at night, is most decidedly novel and wonderfully pleasing.

The ensemble impression, given by this unique conservatory, whether by day or by night, whether from the interior or from the exterior, is altogether charming. It is one of the leading attractions of its vicinage, and is gratefully appreciated by residents and visitors. One end of the building, abutting on the street, gives a front of thirty-six feet, practically affording a public exhibit of the most beautiful plants and flowers in Mr. Burk's collection. Here, against a background of ferns and mosses, are always to be seen the choicest blossoms of the season, the brightest of the colored foliage, the richest treasures of our home gardens, and the most interesting varieties imported from Europe or the Orient.

A Miniature Japanese Tea Garden is One of the Distinguishing Features

As befitting this very novel plant house, many novelties have been introduced. But they are so thoroughly in keeping with the splendid style of the building that they do not appear as innovations; rather as added excellences which go to make up the general complete character of the entire effort, and complete its details.

Among other importations from the East, mention must be made of the water-bearing stones, which are found only in certain caves in India. They are very rarely seen in this country, being more or less difficult to obtain in size and condition to be of real value. Their merit does not alone lie in their rarity, for they have an actual and a very practical value. The stones have the quality of gathering and distributing moisture, which experience shows to be of great advantage in a greenhouse. They are built into the rear wall and banked along the sides of the walks.

Another of the distinguishing features is the Japanese tea garden, a miniature reproduction in a space of ten feet by three feet, of a famous garden near Yokohama, which extends over several acres. Skilled Japanese artisans built it, bringing all material from their home country.

* * *

The Poet—Poets are born, not made. The Girl—I know. I wasn't blaming you.—Boston Transcript.

Among the Architects

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Million Dollar Hotel Additions

Architects Parkinson & Bergstrom of Los Angeles have prepared preliminary drawings for two additions to be built to the Hotel Alexandria in that city. One will be eleven stories high and front on Fifth and Broadway. The other addition will be one of three stories to the original building which will make the latter the same height as the addition to be built and as the one just finished on Spring street. Both additions will be of steel construction and otherwise similar to the existing buildings.

San Francisco Chapter A. I. A.

By Sylvain Schnaittacher

The regular monthly meeting of the San Francisco Chapter, American Institute of Architects, was held at the Tait-Zinkand Cafe on Thursday evening, July 20, 1911. After dinner, in the absence of Mr. Mooser, the meeting was called to order by Mr. McDougall at 8:30 o'clock.

G. B. McDougall for the Committee on Competitions, reported progress; and also mentioned the fact that the committee had been in correspondence with the Sacramento Board of Education regarding the school buildings to be built under the bond issue.

Elmer Jerome Krafft, having filed the necessary application for Chapter membership and having been ballotted upon, was declared unanimously elected to membership.

Communications were received and ordered placed on file as follows: From H. A. Schulze, a communication suggesting a resolution restricting the circulation of subscription lists among Chapter members; from the Ninth International Congress of Architects at Rome, regarding the appointment of delegates, and from the American Civic Association in regard to membership in same.

No action was taken regarding the appointment of a delegate to the International Congress at Rome.

The communication from the American Civic Association, regarding membership, was referred to the Executive Committee of the Chapter with full power to act.

The proposed resolution of Mr. Schulze was read; and amended and carried as follows:

> RESOLVED: That no subscription be solicited nor any subscription list circulated at any Chapter meeting or through the Chapter membership by any member of the Chapter, unless said subscription is specially authorized by the Board of Directors of the Chapter.

The attention of the Chapter was called by Mr. Binder to a circular headed "Citizens' Report," published by the Citizens' Building and Loan Association of San Francisco. Mr. Binder called particular attention to a paragraph which read with reference to building and architects:

"Architects are not necessary. There are many practical builders who can draft their own plans and specifications at little or no cost to the owner."

After some discussion the circular was referred to the Publicity Committee for action.

On motion of Mr. Vogel, duly seconded and carried, the chair was empowered to appoint a committee of three for the purpose of reporting back to the Chapter a form of contract between architect and owner embracing the revised Schedule of Charges of the A. I. A.

Los Angeles Architectural Club

At the July meeting of the Los Angeles Architectural Club an interesting discussion was held on "The Influence of College Life on the Architectural Student." The talk was directly aimed at those members of the club who are engaged in preparation for entrance into American architectural schools.

Alfred F. Rosenheim opened the discussion with a talk on university influence in general and the influence of the Massachusetts Institute of Technology in particular.

Following, Sylvanus B. Marston, recently of Cornell, gave an interesting synopsis of life at that college, bearing mostly on the spirit of the college and the life of the student. His remarks on fees and expenses were listened to with a great amount of attention.

The University of Illinois was dwelt on with a very careful and detailed description in a speech by Arthur Roland Kelly. Mentioning the fact that the annual tuition is only $25 he followed with a synopsis of the courses in architecture and mural decoration, Mr. Kelly also gave a short description of the student life and touched on the methods with which many students work and pay their way through school.

Henry E. Bean made an interesting address on the engineering work of Swarthmore College.

The club discussed the atelier work for the coming season and a few of the members made remarks on the work of the Eastern ateliers. Gilbert Stanley Underwood and Robert M. Cassiday were extended the congratulations of the club for their work in the atelier and in the recent Brickbuilder competition. Mr. Underwood made a report on the work of the house committee.

The August meeting of the Los Angeles Architectural Club was addressed by Elmer Grey and John T. Vawter on "The Advantages of European Travel to the Young Architect." The meeting was one of the most enjoyable of the year.

Ten-Story Building

Architect Myron Hunt, of Los Angeles, is preparing plans for a ten-story building to be erected at the northwest corner of Twelfth and Main streets for H. E. Huntington. It will be of reinforced concrete, fireproof construction and will be a thoroughly modern office

building in every particular. A block scheme is being worked out for the improvement of Mr. Huntington's entire property bounded by Main, Hill, Eleventh and Twelfth streets.

About the California State Armories

So many conflicting reports have been current regarding the new California armories that State Engineer Nathaniel Ellery was asked to write this magazine something of a tangible nature about the progress of work on the three armory buildings planned for San Francisco, Los Angeles and Sacramento. Mr. Ellery sends the following:

I realize that a great deal has been written in the newspapers concerning the armories to be constructed by the State. So far, no sketches have been signed for these buildings, except the Los Angeles armory and that was on June 4, 1911. We are proceeding with the plans for this structure, but we have been unable to get the layout and sketches for the Sacramento arsenal and armory signed.

The San Francisco matter has been held in abeyance, as I understand it, in an endeavor to obtain more land. We have made many preliminary sketches on this work, but it is absolutely a waste of time and money to begin plans until the amount of land is ascertained. It is my understanding that the present site at Fourteenth and Mission streets is scarcely large enough to accommodate a proper drill space in connection with the armory. For this reason the Adjutant General has been looking into the matter. This Department does not proceed with plans until is has the signed original sketches of any institution of the State where a structure is to be built, and until such is furnished us, we cannot proceed.

Trusting I have given you the information desired, I am,

Yours very truly,
N. ELLERY,
State Engineer.

Will Not Dissolve Partnership

A rumor has been repeatedly circulated that the architectural firm of MacDonald & Applegarth, Call building, San Francisco, was to dissolve and that each would open an independent office. The report, however, is entirely without foundation and neither Mr. MacDonald nor Mr. Applegarth can account for the circulation of such a ridiculous rumor. The firm has close to $500,000 worth of work on the boards and under construction.

Town Hall Competition

The town of Pacific Grove is conducting an informal competition for a combination city hall, jail and fire house to cost about $10,000. Building is to be of reinforced concrete and the plans are to be submitted by September 1st.

Big Concrete Garage

Architects Cunningham & Politeo of San Francisco have prepared plans for a large reinforced concrete garage to be erected at Van Ness avenue and Sutter street for Isaac Kohn and to cost in the neighborhood of $75,000. The building will be 120 by 167 feet, two stories and basement with wire glass windows, metal trim and interior finished in ornamental plaster and Oregon pine.

Personal

E. W. Cannon with Architect C. W. Dickey and Ivan C. Satterlee with Architect Albert Farr of San Francisco, have recently been granted certificates to practice architecture by the State Board.

Maurice C. Conchot, C. E., has been appointed as assistant in the San Francisco City Engineer's office, succeeding Dr. Saph who is now engineer for the Harbor Commission.

Architect C. W. Dickey has opened offices in the Central Bank building, Oakland, and has closed his San Francisco office.

Architect Albert Pissis of San Francisco has returned from an extended trip abroad.

Architect William H. Weeks has returned from a six weeks' trip in the East. Mr. Weeks visited his former home in Canada. This was his first real vacation since taking up the practice of architecture in California more than 12 years ago.

Architect Robert M. Taylor, F. R. Greenleaf, associate, have moved their office from the Trust and Savings building to 306 Douglas building, Los Angeles.

Architect B. Cooper Corbett, of Los Angeles is planning a trip to Paris and on his return will stop in New York City for a visit with relatives. Business will be combined with pleasure and Mr. Corbett will gather the latest ideas of Europe and the East in architectural work.

Architect Otto Neher, of the firm of Neher & Skilling, Los Angeles, is combining business with pleasure by making a special study of hotels and office buildings in San Francisco, Portland and Seattle.

The World's Fair Commission

The Board of Directors of the Panama-Pacific Exposition, has selected the architectural commission which is to advise and assist the Executive committee in planning the architectural features of the big fair. The commission is composed of William Curlett, Albert Pissis, Willis Polk, Clarence R. Ward and John Galen Howard—all able men for this work. All five are well known not only in San Francisco but throughout the Coast and are acknowledged leaders of their profession.

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WE DON'T WANT MISSION ARCHITECTURE FOR THE FAIR

A San Francisco architect has written a letter to the daily press suggesting that the Gothic style of architecture be followed in so far as possible in planning the Panama-Pacific Exposition Buildings—a point well taken and worthy of earnest consideration. Let us get away from the so-called Mission or Spanish type. We have had too much of it already. Down in San Diego the exposition buildings are to be in the Mission style and naturally the plastered exterior will predominate. Most of the buildings there are to be temporary and a plaster exterior makes a cheap, yet at the same time, not unattractive appearance—for a while. In San Francisco the idea is to erect as many permanent buildings as possible. These, therefore, should be of substantial construction and if there is to be any cement exterior finish about them it should be backed up with brick or reinforced concrete. Let us get away from the combustible frame and lath and plaster structures which invariably go with the Mission or Spanish style. To quote the architect's letter referred to above:

An appeal for a style of architecture for the coming Panama-Pacific International Exposition in keeping with Anglo-Saxon tradition will doubtless be useless, but as a student of architecture as a mode of expression I can not refrain from a plea for the noble and neglected Gothic in this connection.

It seems an accepted tenet of exposition boards and of public architecture in general that the Italian or French renaissance, with its florid line and mass, is best adapted to world's fairs and government structures. Yet the genius of our civilization is emphatically Anglo-Saxon.

For this particular world's fair there seems to be an assumption that, as a matter of course, the Spanish mission style will dominate. Yet we are far from sympathy with Castilian ideals of ethnic development. Wherever the Anglo-Saxon and Spanish civilizations have come in contact the irrepressible conflict between them has flamed forth in war.

The plaint is often heard that there is no American architecture aside from the ugly skyscraper. The reason is clear.

namely, that we have never used a style of building that is an expression, an outward embodiment, of our national thought and life. Wherever such an expression is found, a small village in Saxony, for example, we have a beautiful art gem, simply because it is sincere and harmonious, an outgrowth of the living conditions of the dwellers there.

Those who remember the Gothic skyline of the sham castle on Telegraph hill years ago may have wondered at the thrill of something akin to recollection with which they beheld the battlemented towers limned against the western heavens. It was in reality a glimpse of the old home, the cradle of our race. Crude as the old place was, its loss swept from San Francisco architecture the one sincere dominant note.

The Panama buildings will fling to the eye the gaudy, meaningless lineaments of the Norman renaissance or Spanish mission. This is a regret and an appreciation of a style whose unhackneyed employment would mark our fair as daring and true to type. The noble beauty of the Gothic architecture is nowhere shown in any comprehensive group. How grandly it would grace this farthest western frontier of the civilization of the Anglo-Saxon, where it faces its antitype, the oriental!

THE USE OF CONCRETE IN DOMESTIC ARCHITECTURE

The failure of concrete construction in domestic architecture to win more general favor has so far been largely attributable to too much plainness or perhaps better still, too much sameness. "Plain Janeness," in other words, has blocked the way. If mouldings, lintels and belt courses are resorted to, the cost for special moulds at once soars, sometimes to an altogether prohibitive figure. In domestic concrete work the American public demands something that shall be practicable and reasonable in cost and at the same time meet aesthetic requirements. This subject is much in the minds of architects. They are eager for a satisfactory solution and will hail with delight a workable combination of utility and artistic worth. Some architects have reached happy solutions of the problems presented them by the judicious use of tapestry brick and tile inlays. A writer in House and Garden sees great possibilities in staff and stucco work. In the latter, he says, we have scarcely dipped into the rich possibilities disclosed by the examples of the Old World.

THE DEFINITION OF ARCHITECT

The definition of "Architect," strange as it may appear, is often discussed by members of the profession with considerable variation of opinion evidenced by the interpretations offered. The only authoritative ethical definition, recognized in the United States, is that approved by the American Institute of Architects. A legal status is established in states where the profession is regulated through examination and license. Fundamentally there is but one definition, and that is the literal "master builder." It defines the profession so completely that there need be no discussion, even with the many additional requirements thrust upon the architect by the multiplicity of modern practice. It does not necessarily mean that an architect must know the different advantages of one plumbing, heating or ventilating system over another, but it does mean that his design should follow his plan and that the construction should be under his personal supervision, his judgment to be final.

Announcement

Beginning with the October number, the Architect and Engineer will publish a series of articles, illustrated by personal sketches, measured drawings, etc., of architectural subjects of Italy, France, Spain and England, by August G. Headman of the firm of Righetti & Headman, San Francisco. These articles and accompanying sketches should prove of especial interest and value to all members of the profession. In many cases, photographs of the subjects will be accompanied by sectional drawings and measurements.

HEATING AND LIGHTING

Plumbing and Electrical Work

House Heating Problems

AS we have in the last few years gradually turned from wood to metal for many things in the construction of a modern building, we find the wooden window frame and sash being replaced with the metal sash in almost every class of building, including the large country residence, writes William J. Baldwin, Jr., in the Engineering Review.

The effect of this type of window on the problem of warming a building is an important one from many standpoints, and which to a great extent has been overlooked. If the metal frame hinged or pivoted window can be made as tight as the wooden sash, there will be practically no change in the heating problem. I find that with one type of hinged metal window sash which was recently put into a large country residence near New York, the owner is unable to keep the rain from coming through the sash crevices, and is obliged to place towels on the inside of the sills in his beautifully furnished rooms to prevent rain from damaging the furnishings. During the winter just passed, he suffered from cold draughts and was obliged to force his heating apparatus to its limit at a great expense for fuel, and even then could not keep the house comfortable in severe weather.

You can imagine the amount of cold air that must get into the rooms through these window sash crevices on a windy day with the temperature outside at zero. I will give a few figures below on this subject which may be interesting to the architect, owner and contractor.

When making tests recently to ascertain the amount of air which leaks through a closed window, I was surprised to find that an ordinary size window when closed and apparently fairly tight will leak sufficient air into the room to very nearly supply continually one person with fresh air if the person is not working or exercising violently, even though there was no other way of fresh air getting into the room. In an ordinary loft building, with windows on three or four sides, there is very little need of forced ventilation unless the building is used for manufacturing purposes and the occupants work in close proximity to each other. Even where forced ventilation is not necessary it is desirable, if possible, to have vent registers discharging into vent flues or shafts to carry off the vitiated air. I found the leakage through an ordinarily tight closed window having 16 lineal feet of sash crevice and with the wind blowing at the rate of about 10 miles an hour against the windows was 800 cubic feet of air per hour. Assuming this to be a fair average condition, what must the leakage be through a metal sash hinged window such as I have seen in this country residence, situated on top of a hill and exposed on all sides? There was 72 lineal feet of sash crevice around one window, the window containing six hinged panels, each about 2 x 4 feet. Was it any wonder the occupants felt cold draughts around the room when directly opposite the windows were open fireplaces? The air coming in through the sash crevice at some points would blow a match out when held out about an inch from the window. I think I am conservative in saying that the leakage of cold air through these windows was between 10,000 and 15,000 cubic feet of air per hour, or about the amount of air that would pass into a room through a 10 x 10-inch register at a velocity of six feet per second.

Assuming the leakage to be 12,000 cubic feet of air per hour through this window, it would take at least 50 square feet of direct steam radiating surface to warm this cold air from zero to 70 degrees Fahr., and this 50 feet of radiating surface would be in addition to the amount of radiating surface necessary to warm the room under ordinary conditions. Even though sufficient direct radiating surface could be placed in the room for this purpose, the problem of preventing draughts could not be eliminated and no satisfactory degree of comfort could be obtained. In the first instance, the cost of installation of so large an apparatus for this purpose is prohibitory, and the unsightliness of necessarily large radiators would be objectionable, while the cost of fuel would be enormous. In a private house with only 15 windows such as I have herein described it would be necessary to burn about 1000 pounds of coal per day for the purpose of warming the cold air which would leak through the windows. It can be readily seen that it is econ-

omy to put in tight windows, and the cost of weather strips or even storm windows is a good investment under any condition, as it will not only overcome to a large extent the leakage of cold air, but will also considerably reduce the effect of the window glass as cooling surface by having an air space between the outer and inner sash. It is not my intention, of course, to discourage the use of metal sash windows, but to show the necessity for having not only this type of window, but all windows made as nearly air-tight as possible. Where metal sash windows are used with hinged panels, the number of lineal feet of sash crevice through which air will leak is so greatly increased over the ordinary slide sash window that special care must be taken to make this type of window tight.

Specifications for Electric Wiring

By Harvey E. Bloomer*

A UNIVERSAL specification which can be used for all classes of electrical equipments, is a subject that has been before the architects throughout the entire United States and has never been solved. The Western Association of Electrical Inspectors appointed a committee to prepare specifications, one which could be adopted for all classes of dwellings, one for store and office buildings, and another for factories, but when submitted to the association it was decided that although great care and considerable thought had evidently been given the matter, the specifications did not meet the requirements, and it was finally decided impossible to construct a universal specification. Inasmuch as the Western Association, composed of men of ability in electrical engineering, have come to the above conclusion, I am inclined to believe that the most advisable method for you to adopt in making specifications would be to state the number and location of lights; the kind and location of switches, the location of cutouts, the place where the service is to enter, where the meter or meters are to be located, and the kind of wiring, whether knob and tube, rigid or flexible steel conduit or moulding. State that the wiring must be neat and in a workmanlike manner and in conformity with the rules of the Board of Fire Underwriters. It would also be well to add that before the first installment is paid a letter of approval must be secured by the contractor from the Board of Fire Underwriters.

I have observed in many specifications obsolete and irrelevant terms indicating that a general specification such as those published in book form had been selected and filled in to suit the installation that it was intended to cover. As a consequence the specifications were lengthy, contradictory and misleading. It is this embarrassment, I am informed, that the architects are endeavoring to avoid, and consequently I suggest that the specifications be brief, explicit and free of any statements as to how the equipment should be installed excepting that it must be done in a neat and workmanlike manner, etc. By adding that the material and workmanship must meet the approval of the Underwriters and conform to their rules in every respect and detail it covers everything that you might mention and saves you considerable time and possible errors. As the Underwriters' rules only take care of the capacity of wires and not the drop in voltage, it would be advisable in large installation that the maximum percentage of drop be specified.

Specifications are important and necessary in connection with electrical construction, yet there are numerous other very vital features which should receive close and careful attention. One is the time when the electrician is permitted to perform his work. Too often has the electrical work been installed at the same time as the plumbing and heating and frequently with the result that the electrical installation, which was possibly first class and worthy of praise, has become extremely menacing, occasionally resulting in a fire, owing to having been disturbed and crossed with pipes and other objects. I would advise that the electrician be prevented from working until all other mechanics are through and the house ready for lathing. Then, after the equipment has been inspected, you will know positively that it has not been disturbed. I would also advise that the lathers be permitted to work only after you are assured that the equipment has been inspected and accepted. The suggestion, however, refers only to concealed knob and tube construction, as rigid steel and flexible steel conduits are not subject to the same misuse.

The Underwriters' rules permit 660 watts, or twelve candlepower lamps, to a circuit which the electrician takes advantage of. Frequently after the equipment is completed it is decided when fixtures are being purchased that more lights are desired in some of the rooms than originally intended and consequently the circuits become overloaded. To avoid this, it might be well to specify eight lamps to the circuit as is being done in other towns and then there will be ample capacity to add more lamps, fans, curling irons, etc. To facilitate the work of the electrician and avoid errors and disputes it would be well to furnish

*Electrical Inspector Milwaukee Board of Fire Underwriters. Paper read before Milwaukee Architects' Club.

him a blue print upon which the location of the fixtures and switches and various devices should be designated. The symbols most favored and most prominently used in designating the kind and location of switches, brackets and fixtures and the number of lights on each are those adopted by the National Contractors' Association, which, I believe, will be pleased to furnish them on request.

With the advance of electricity for domestic purposes, the architect finds that he has new problems to solve and an ever-increasing responsibility. It is but very recently that a new appliance has been introduced that is destined to become more prominently used as time advances and that is the vacuum cleaner. The installation of this apparatus, also flat irons and all heating appliances, should receive special attention and an individual circuit should be installed for each the size wire depending upon the capacity of device.

The Same Thing Has Happened in San Francisco

From the Builders' Guide, Philadelphia.

To attempt seriously to discuss at this late day the question of the value of advertising as an agency for the disposal of goods would savor of absurdity. It would be like entering into a discussion of the question of the morality of the commandments. And yet in spite of all that has been said and written upon the subject of the value of advertising, there are in existence today hundreds of presumably "live" concerns in various lines of business who not only do not advertise, but whose principals actually regard advertising expenditures as something wasteful and foolish.

An incident that happened in the office of the Guide only the other day serves aptly to illustrate this fact. An upstate buyer wrote asking the Guide to put him into communication with a house handling a certain line of goods—a line which it so happened was not represented among the Guide's regular advertisers.

Knowing that an honorable concern handling this line was within a stone-throw of the Guide's office we went to the trouble, purely as a matter of trade courtesy, to turn the inquiry over to this house. As a result the house in question closed the sale of a very nice order and gained a brand-new customer in a promising field. Naturally our representative suggested to the head of the concern the wisdom of carrying an "ad" in the Guide for the benefit of other possible buyers among the Guide's large and growing family of readers.

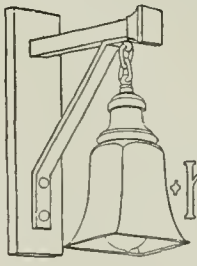
"No," said the head of the concern, "that wouldn't pay. We don't believe in advertising. Our business is all done direct between our salesmen and the trade."

"But," interposed the Guide man, "here is a case in which you have sold a good-sized order through the Guide. Your salesmen do not figure in this transaction in any way. Isn't it a fair presumption that there are other buyers in the trade who, having never come into contact with your salesmen, know nothing whatever of your house or your goods? And wouldn't it be good business to keep your name and your product before these people with a view to other inquiries of this kind?"

"No," said the head of the concern. "We've threshed that all out long ago. It doesn't pay."

Now for the "moral" of this little narrative.

Twenty years ago this same concern absolutely dominated its field. It was without a rival. Today it has dropped to such a low estate that it occupies a small building on a side street and is



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elbowed and jostled at every turn by more progressive and wide-awake competitors. The head of the concern knows this to be the case, for he mentioned it plaintively in the course of his talk. He added that he was completely unable to understand why the trade had shifted to new concerns.

Our representative didn't like to tell him the reason—just then. He said it would have sounded too much like "rubbing it in."

But the Guide will tell him the reason and tell it to him plainly right here. The trade has shifted to newer concerns because his concern "doesn't believe in advertising." That's the reason! And that is also the reason why a whole lot of other excellently conducted enterprises in the local building field and allied channels are running along on a one-horse basis.

The trade never hears of them. Like a terrier chasing its tail, concerns of this type go whirling around in a narrow circumscribed little orbit of their own until crowded closer and closer by more enterprising rivals the sheriff finally steps in, and—rings down the curtain.

In the business world of today no house can exist and continue to prosper the head of which is obtuse or dunderheaded enough to admit that his concern is one which "doesn't believe in advertising."

Modern business and advertising are as inseparable as were the Siamese twins. Remove either and the other approaches dissolution.

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Plumbing Work in Building Construction

The element of plumbing in building construction is one of the most difficult with which owners, architects and builders have to contend. Cost is often a barrier against a thoroughly scientific installation with high-class piping connections and fixtures. The result is that defective plumbing sometimes goes, and the owner finds it a constant source of expense for repairs. Such plumbing is not uncommon in speculative apartment houses.

The plumbing work of a building is divided into two parts, the outside and the inside. In the first part are the roof work and the conduits leading from waste pipes of closets, bathrooms and sinks, ridges, hip rafters and valley gutters. Proper supervision is here necessary to guarantee perfect junctions at the overlaps of zinc, iron, tin or lead, for upon this depends the prevention of leaks, which are frequently costly in the extreme, through causing decay of steel or wooden supports.

Certain parts of a roof are exposed to greater stress of storms than others. Here reinforcements are necessary. Danger is also present from snow slides, which, if combined with sleet or particles of ice, will rip shingles or tiles from their fastenings. Where straps are soldered onto the tin roof or bolted on the slate shingles, care must be taken that the connections are made water tight.

Another valuable point for prospective builders to remember is to have all soil and waste pipes erected from the outside walls of the building. Water closets should be arranged so that they are against a back or interior wall, and the branch soil pipe should be carried through the wall and inserted into a branch horn cast on the upright soil pipe and jointed firmly with red lead and rope yarn.

It is now customary for the plumber to make a test of the system before the walls are enclosed. These are called the smoke and peppermint tests. If the owner wishes to have this done by a disinterested party, there are companies that make a specialty of this kind of work and their reports are generally reliable. Some of them have a contract system which enables the owner constantly to keep his plumbing under surveillance.

The economy of installing good plumbing can not be emphasized too strongly. In this age of electricity electrolysis is an ever present menace to all service metal. The average owner thinks that this condition prevails only where pipes are buried in the earth, but it has been known to eat away water pipes many feet above the street level. Asphaltum and dampproofing coatings are on the market which prevent dampness and electricity from reaching the pipes. There are also many other devices for preventing this destroying agency from operating.

Owners sometimes blame lack of water pressure upon defective plumbing when it is really due to "pipe tuberculosis." As a general rule, lack of pressure is due to one or two things—a series of leaks or "pipe tuberculosis."

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This is a form of interior rust, and deposits which form on cheap pipe until they almost entirely close the water spaces. The only remedy for this is new piping.

Interior plumbing is usually of a better grade than that officially designated as the "rough work," but beneath the nickel plating inferior grades of material are sometimes used. The almost universal practice today is to install exposed plumbing and heating conduits, but even in this the owner or his superintendent of construction has need for great care if he expects to get full value for the money he spends on his plumbing system.—Construction Record.

Two Books on Corkboard Insulation

Two interesting books have recently come to our notice. Both are published by the Armstrong Cork Company of Pittsburgh, Pa. One contains a comprehensive paper on "Nonpareil Corkboard Insulation," describing its manufacture and uses, particularly as an insulating material for cold storage warehouses, breweries, ice plants, etc. The other volume is a story in pictures of the popularity of Nonpareil corkboard, the illustrations showing many of the more prominent buildings throughout the United States, in which coarkboard insulation was used.

That Suspension Bridge Across San Francisco Bay

The modified plans of Allan C. Rush, the Los Angeles engineer, for the proposed $18,000,000 suspension bridge between San Francisco and Oakland have been received by Secretary Wilber Walker of the Merchants' Exchange of Oakland, with the announcement that Rush has modified his application to the War Department for permission to erect the bridge across Yerba Buena island.

The new plans place the Oakland end of the proposed structure just north of the Key Route pier and south of the Emeryville line. The bridge will cross Yerba Buena at the extreme north, entering San Francisco at the foot of Greenwich street, near the base of Telegraph hill, as in the original plans.

The change in Rush's plans was made in order to eliminate interference with shipping. The present location for the proposed bridge on the eastern side of the bay is directly above shallow water where navigation is impossible.

An effort will be made to secure fifteen acres of water front property as an approach to the transbay bridge in North Oakland and Emeryville. The proposition has been endorsed by the Merchants' Association of San Francisco and the Merchants' Exchange of this city.

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Doings of the San Francisco Architectural Club

The exhibition held at the club quarters of the San Francisco Architectural Club, in June, proved to be very successful. From the number of visitors the popularity of the club and the interest in its work were shown to advantage. Drawings on exhibition consisted of the atelier work, for the seasons of 1910 and 1911, the competitive drawings of the San Francisco sub-treasury, and the working drawings of the new Oakland city hall.

Wednesday evening, June 21st, Mr. Donovan, supervising architect for Palmer & Hornbostle, architects on the Oakland city hall, lectured before the club members and their friends, on the construction of the Singer building of New York.

Strictly speaking, and borrowing the expression from Mr. Donovan, his address was more of a heart-to-heart talk than a lecture. Inasmuch as Mr. Donovan was on the Singer building during the course of construction and came in contact with the various problems that necessarily arose, he was in position to give some very interesting facts. As is always the case where a great number of men are employed and where good fellowship exists, some amusing incidents arise, and Mr. Donovan included some of the funny side of the supervising architect's life, as well as the serious side.

The San Francisco Architectural Club is making a campaign for new members, and as part of this campaign has placed in the draughting rooms of every architect in the city a very attractive poster showing views of the club quarters and some of the work of the atelier.

Saturday and Sunday, July 22d and 23d, the members of the club and their friends enjoyed a hike to Bolinas.

Splendid Los Angeles Residence

Architect A. B. Benton of Los Angeles has prepared plans for a handsome fireproof sixteen-room residence to be erected at El Nido, La Canada, for Lieutenant Governor A. J. Wallace. It is designed in the Tudor-Gothic style of architecture, which will be carefully carried out in detail in the interior as well as exterior. The construction will be entirely of reinforced concrete with plastered and waterproofed exterior, concrete and hollow tile floors with the Kahn system of reinforcing, hollow tile interior partitions and concrete roof covered with Malthoid. The main section of the house will have three stories and basement, 95 x 55 feet, with a one-story and basement service wing, 42 x 28 feet. Being built on a slope, the first floor will be several feet above the grade and, which together with the broad veranda extending across the entire front,

A. W. KENNEDY, BUSINESS MANAGER
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will have cast cement balustrades. The main columns and arches will be of carved stone. The exposed portion of the basement story will be faced with native stone. The porches will be paved with tile.

The interior finish will be of oak in the first story and white cedar or spruce in the second. The mantels will be of tile and carved wood. There will be ornamental plaster ceilings and cornice oak floors in the first story and finished cement in the second, six bathrooms with vitrious tile floors and wainscot in five, marble floor and wainscot seven feet high in the shower bath; ornamental iron railings, window guards and gratings; plate, leaded and art glass; French windows, bevel plate mirrors, glazed tile sink backs, hot water heating system and conduit system of electric wiring.

The Willis A. Clark Company

Willis A. Clark, formerly a member of the contracting firm of Scarritt & Clark of San Francisco, and which partnership was dissolved last month, will continue to take an active part in the building industry of San Francisco and vicinity, having organized the Willis A. Clark Company with offices on the sixth floor of the Monadnock building. Mr. Clark is well known to the architects and building trades. He has personally superintended the construction of quite a number of prominent buildings and has specialized in reinforced concrete. Prior to his partnership with Mr. Scarritt, Mr. Clark was with the Ransom Concrete Company. The new firm will pay particular attention to concrete construction and will figure either general or subcontract work in this line.

Chaffey Polytechnic School

Architects John C. Austin and W. C. Pennell of Los Angeles have been commissioned to prepare plans for new school buildings to be erected at Ontario at a cost of $160,000. The school districts of Ontario and Upland have united and formed the Chaffey school district and the present buildings will be remodeled and additions built. New buildings to be erected will be a manual arts building, science hall, gymnasium, bath houses, experiment stations, etc. The group plan will be followed and the style of architecture will be Mission. The construction will be of steel, brick and concrete. A special feature will be made of a fireproof library to house the present collection of the Chaffey college. The endowment fund which has been used for the upkeep of the college will be available for the maintenance of the library and it is planned to make it one of the best in the State.

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Concrete Best for Elevator Enclosures

Recent disastrous fires in so-called fireproof buildings have led to renewed consideration of the materials entering into their construction. Special attention is being paid to the general use of terra cotta or tile blocks for stairway and elevator enclosures, for which they are generally used. The material is conceded to be good for this purpose, but it does not work so satisfactorily when used for mounting fire doors at the necessary openings in such shafts. W. C. Robinson, of the Underwriters' Laboratories, chairman of the committee on fire protection coverings for windows and door openings, of the National Fire Protection Association, declares as his personal opinion that tile and terra cotta blocks are not satisfactory for this purpose. He regards inclosures to vertical openings through buildings as ranking second only to fire walls in point of importance from the fire protection standpoint. Hollow building blocks often fail by the cracking away of the shells from the webs, due to the greater expansion of the shells. It is difficult to properly mount fire doors at the opening of tile and terra cotta shafts, as if structural steel is used, it is apt to expand under heat and cause failing of the tile walls. Mr. Robinson favors the use of reinforced concrete or brick with ample reinforcement properly anchored at each floor, as the materials best suited for elevator enclosures in fireproof buildings.

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The Cleanliness of Concrete Structures

It is a well established fact that a factory building which is well cleaned is less liable to take fire than one in which rubbish is allowed to accumulate in dark corners. Owners of reinforced concrete buildings advise that the cost of keeping their concrete buildings clean is much less than was their experience with the mill-construction type. A concrete building is a monolith. There are no cracks in which dust can lodge and vermin find shelter. Cement, which is the binding material in concrete, is largely composed of lime, which in itself is a natural sanitary agent.

Butte Company Busy

The Butte Engineering Company of San Francisco and Portland has the contract for wiring the handsome $250,000 residence which is being erected in San Francisco for A. B. Spreckels from plans by Architects MacDonald & Applegarth. The same firm has taken a $15,000 contract to equip the Oregon Railway and Navigation Company's bridge across the Willamette river with 1000 horsepower to operate the lift draw and also 50 electroliers to illuminate the bridge at night.

New Telephone Buildings

The engineering department of the Pacific States Telephone Company is quite busy turning out drawings for new buildings to be erected in different Coast cities. Contracts have recently been let for buildings in San Francisco and Los Angeles and plans are now being figured for buildings in Bakersfield, Long Beach, Cal., and Aberdeen, Wash. The structures will vary in cost from $30,000 to $50,000 and will be either of reinforced concrete or mill construction.

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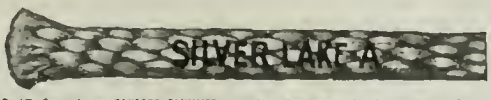

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When writing to Advertisers please mention this Magazine.

By the Way

Some Industrial Information Worth the While

Catalogue of Architectural Sheet Metal

A handsome catalogue of nearly 100 pages has just been published by the San Francisco Metal Stamping and Corrugating Company. It is a credit to the publishers and there is satisfaction in realizing that San Francisco, and the Pacific Coast for that matter, can support a big house of this kind—one that specializes in a particular line of building material and supplies the Coast trade from its own stock instead of depending upon the Eastern market. The publishers make the following announcement to the trade:

"It affords us great pleasure to present to the trade this catalogue illustrating ornaments which are used in the construction of architectural sheet metal work. All the articles shown in this catalogue are original—designed by leading architects and modeled by a most prominent sculptor. Making a specialty of work from drawing and model we furnish estimates and submit models to architects without extra charge. We are housed in a spacious modern building, splendidly equipped with the latest machinery, and have a force of competent and experienced employees that insures correct and prompt execution of every order. We are the largest exclusive manufacturers of sheet metal ornaments on the Pacific Coast, and by our process of work every detail of drawing and model is reproduced in the metal. Our success has created imitators of our methods, therefore we request a comparison between these copies and work manufactured by us. We invite inspection of our plant."

Catalogues will be mailed free to any address upon application.

"Amiwud"

The Paraffine Paint Company is meeting with considerable success in constructing an imitation wood—made of pulp fibre—which is especially desirable for lining walls and ceilings of interiors of small country houses or summer camps.

Amiwud is a mechanical reproduction of the beautiful, artistic hardwood grains. It is identical in effect and appearance, is reproduced on a chemically treated wood fibre pulp substance, and subjected to a great hydraulic pressure. It is manufactured in different thicknesses necessary to fill the various uses and requirements in the interior finishing of buildings.

Amiwud is made in double rolls (same quantity per roll as wallpaper) and used for veneering any smooth surface, either plain, concave or irregular shapes, such as moulding, etc.

Amiwud boards are used to line the walls and ceilings of interiors by nailing same directly to the studding, then covering the joints with Amiwud battens. The result is an artistic finish in hardwood panel effect, replacing the use of plaster and wood, for covering the walls and ceilings of building interiors.

Blank boards are the same as Amiwud boards in weight and quality, and are used in the same manner, but the surface has no Amiwud finish. After being erected, if natural color is not satisfactory, they can be finished and decorated the same as plaster walls, at a considerable less expense.

Five-story Apartment House

J. W. Chalmers of Los Angeles has drawn plans for a five-story and base-

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ment, class B, apartment house, 160 x 100 feet, to be erected at the northwest corner of Sixth and Lake streets for Alonzo Lee Hill, 984 Menlo avenue. It will contain two hundred rooms and is estimated to cost $140,000.

Fireproofing With Metallic Doors

Two booklets recently issued—"Buildings as They Should Be" and "The Lesson of the Singer Fire"—are convincing of the fact that the excellent qualities of fireproofing and artistic finish of the Dahlstrom metal doors and trim are unequaled.

There is only one way to properly fireproof a building—to use no material in its construction that can burn. One will get the best results in making an otherwise non-combustible building absolutely fireproof by installing the Dahlstrom doors in every opening. If this is done, and the doors are closed, the manufacturer guarantees that no fire can spread beyond the room where it originates.

The Dahlstrom doors have been approved by the Underwriters' laboratories after successfully passing through one of their severe tests. These doors are recognized as the original and standard of fireproof qualities and aesthetic beauty of finish. An elastic baked enamel is used, in a choice of plain colors, or a grain is furnished to match any kind of wood so closely as to defy all but experts to detect the difference. Architects and builders should get in touch with the Dahlstrom Metallic Door Company, Jamestown, N. Y.

More Evidence in Favor of the Redwood Shingle

The Redwood Shingle Association, which is conducting a telling campaign in the interests of the redwood shingle as a fire resistant, has received the following communication from A. Mason Kinne, assistant manager of the Liverpool and London and Globe Insurance Company:

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"Gentlemen: Your communication of recent date was duly received, and noting the desire on the part of the manufacturers of redwood shingles for an expression of our opinion as to whether or not redwood offers better fire protection than any other timber used for construction purposes, we have taken some little time to ascertain what we believe to be the facts in the case, and without going into any expressions of personal opinions, we desire to say that we coincide with the ideas expressed in a paper written by Calvert Meade, an experienced adjuster and insurance man, which was read at the 18th annual meeting of the Fire Underwriters' Association of the Pacific, held in this city. We think we can do nothing better than to quote this conclusion upon the subject:

In all frame buildings on this Coast the principal woods used in construction are Oregon fir, spruce, or pine, California redwood and mountain pine (Sierra). All these trees are formed of rings of a ligneous and fibrous nature.

We know rosin is a strong component part of Oregon fir and mountain pine. In all fires under my observation, as soon as the water strikes, the ligneous rings contract and from the fibrous part exudes rosin and other combustible compounds which readily attract flame, and while the same relative action takes place in redwood, no rosin is exuded; in fact, it has been stated that a substance having the nature of tannin, and which is antagonistic to further combustion, is formed, thereby temporarily protecting the wood. How this acts is not known, but I will offer as a possible explanation the following: In the first place the substance itself may have a high ignition point, requiring a high temperature to take fire and burn, or what seems more plausible, holds non-volatile, inorganic salts; that is, mineral salts in solution, which, coating the burning substance, excludes the air and prevents further combustion. The foregoing facts are greatly in favor of redwood as a burning material, but it must be borne in mind that both woods will burn.

"If the above, with our endorsement of the conclusions arrived at by Mr. Meade, will be of any value, we are glad to give it to you."

The Use of Asphaltum for Dampproofing

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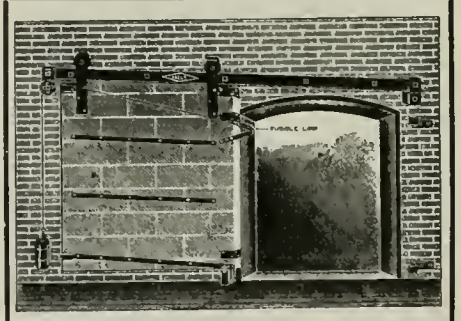

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ment walls and floor. There are localities such as that portion of San Francisco to the north of Washington street and west from Van Ness avenue and the whole area of Berkeley, where basements are useless during a large part of the year if no precautions have been taken in the construction of the building to waterproof foundation walls and floors. The natural drainage from the hills together with accompanying odors of saturated walls may be kept out at a very nominal expense in the first construction by application of asphaltum or felt or both.

The conditions vary so, that no rigid specification will apply to all jobs. Waterproofing is a specialty and consultation with parties interested in that line of work will result in the most economical and effective means of obtaining results required. The market has been flooded with preparations guaranteed to waterproof. No doubt each one has its merits, but none are adapted to all situations. Asphaltum is the base of numerous waterproof paints and there are few places where the asphaltum can not be applied in its natural state economically and effectively. Where the straight asphaltum has been applied hot, there is sufficient body to withstand the actions of the weather for a long period.

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The distillate burner consists of a device or generator about 5 x 12 inches, fed by a hollow wire from a small distillate tank. Used in connection with the apparatus is an 8 or 10 gallon tank for the storage of air which is created by a hand pump to about 30 or 40 pounds pressure, then a reducer valve is attached to this tank and a small oil tank for the purpose of reducing this air pressure at the top of the oil tank to about 10 pounds, to force the oil through the hollow wire into the generator. After many months experience with this same generator, upon taking it apart the manufacturers found not the slightest bit of carbonizing or corrosion of any kind. The expense to operate is about one cent per hour steady burning, and the perfection in this distillate generator has been gotten through the company's own patent burner. In using this distillate there is about 140 per cent greater heat efficiency than that of artificial gas.

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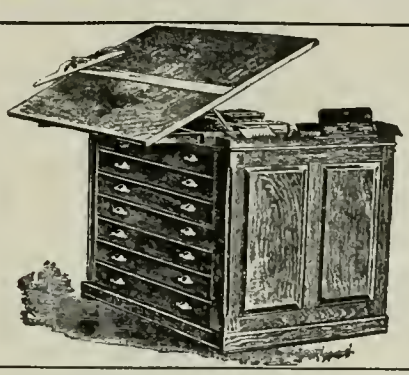

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It was the desire of the owners to have a distinctive building, and the early Italian Gothic architecture was selected. This style of architectural treatment has not heretofore been employed for buildings of this character, and in this respect the edifice will be unique.

The details of the two facades are adapted from various Italian examples. The three lower stories are of limestone and the upper stories of gray-brown Roman brick and terra cotta, with various light-colored marbles worked in panels. Under the cornices are various colored marble panels in terra cotta frames.

The cornice, which is to run entirely around the top of the building, will be of copper, which will be accentuated by treating with silver, gold and colors.

The large windows on the lower stories will be of bronze, and the vestibule and entrance hall of Italian marble. The entire ground floor will be devoted to the retail department. It will be finished entirely in marble and Caen stone, and

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the soffits of the beamed ceiling will be brought out in color from various Italian examples.

There will be a mezzanine gallery with bronze rails and a marble stairway, with bronze railing, leading up from the first to the second floor. Each floor will be devoted to one or more departments. The executive offices will occupy the eleventh floor, while the twelfth floor will be used as a sample and exhibition room.

The building has been designed so that all four sides will be attractive. It will be known as the "Johns-Manville Building" and will have the unique distinction of being one of the few twelve-story structures to be entirely occupied by a manufacturing concern for office purposes only.

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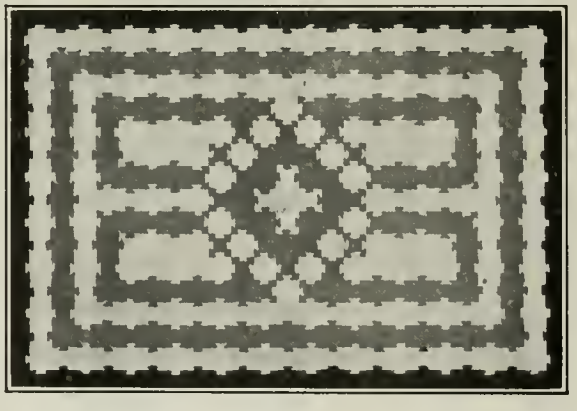

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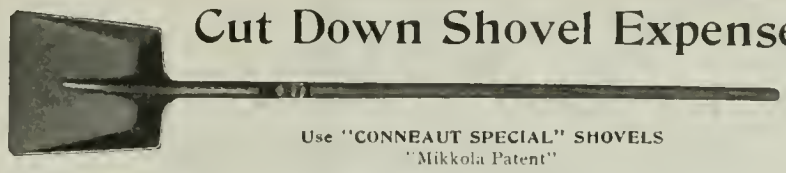

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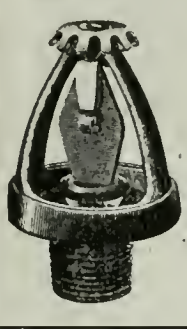

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Of the many new industries that sprang into existence soon after the San Francisco fire of 1906, probably none has met with more signal success than the Golden Gate Structural and Ornamental Iron Works whose shop and yards are at 1479 Mission street. Starting with a comparatively small plant the business of this company has steadily increased and each year it has been found necessary to add more room to accommodate new equipment.

The success of the company was assured from the first—that is, if the ability of the men who were behind it counted for anything. Both Mr. Hoffman and Mr. Fleigner are skilled mechanics in their line and have had many years experience. C. F. Hoffman was at one time foreman for Winslow Bros. of Chicago, one of the largest and best known makers of ornamental iron in the United States. Later Mr. Hoffman was employed by the Brode Iron Works in San Francisco. His partner, L. W. Fleigner, is a practical structural iron worker and he supervises the inside work while Mr. Hoffman attends to the business end. Both the ornamental and structural departments are equipped with modern machinery and a force of men is employed large enough to turn out any

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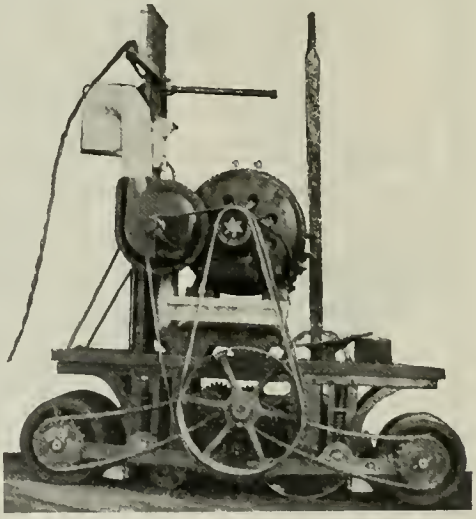

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ordinary job in short order. Contracts are taken for any structural or ornamental iron job of reasonable size. Architects who have had experience with the firm are well pleased and do not hesitate to call upon them to figure any new work as it comes up.

One of the most recent contracts completed was the steel frame for the United Railroads' car barns at San Jose avenue and Guerrero street, San Francisco. As shown in the accompanying cut, it is a splendid piece of steel work and speaks well for the contractors. The Golden Gate company not only furnished all the material but supervised the erection. There are over 100 tons of structural steel in the building which covers a lot 96 x 136 feet. Other contracts completed by the company include the Commercial high school, the Sutro, McCoffin, Clement and Garfield schools, the Knights of Pythias building at Hermann and Valencia streets, Paff and Bauer, architects; the Smiddell building, Frederick H. Meyer, architect, and the Heuter apartments, designed by the same architect. For the schools mentioned above, the company furnished both the structural and ornamental iron with the exception of the Commercial high school, the ornamental iron only being furnished on this building.

Exhibition of Structural Materials

State Mineralogist Aubury is notifying producers of structural materials in California that the exhibition of such materials in the Ferry building, in San Francisco, will give producers a splendid opportunity to make the resources of the State, and the possibilities of home production, known in the most accessible of all places in San Francisco.

The exhibition will be exclusively Californian. In its scope it will be sufficiently wide to include each and every mineral that is used in construction. This means that the exhibits, collectively, will give an object lesson of the greatest interest to architects, contractors and builders all of whom will be kept in touch with the California State Mining Bureau as much as possible.

The work of making ready for the exhibits has made considerable progress, tile flooring has been laid, ornamental arches have been erected and various sorts of work to make the installation of samples of terra cotta, brick, marble, sandstone, granite, cement and all other structural materials, attractive to all visitors to the State Mining Bureau, who number something like 10,000 a month, has been accomplished.

Public minded structural materials men, who clearly see the advantages to all in having the facts known, have done much to provide for a great exhibition.

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California Climate Produces Best Quality Inks

CLIMATIC conditions of southern California have been appreciated as highly favorable to industrial development in the fact that the equable climate makes it possible for workmen to pursue their trades every day in the year unhampered either by enervating heat or excessive cold weather. In some lines, glass manufacture, iron works and similar industries where the work is done under the great heat of furnaces, the California climate is recognized as making the workmen capable of the highest point of production.

Yet there are branches of manufacturing where the effect of the equable climate is favorable on the product itself, a feature that has not occurred to many. One of these is the making of inks, which it is said can be manufactured in California more cheaply and with better results in the quality of the product than anywhere else in the country, simply on account of the favorable climatic conditions aiding in the ripening and ageing of the ink.

There is but one ink manufactory west of Chicago and that is located in Los Angeles—the Frederick Charlton Company, which is operating a plant at 142-8 Anderson street. This company is shipping its product all over the country and competing successfully in the trade even in New York City where the largest ink manufactories are located.

The production of ink in the United States is confined practically to seven manufacturers. This is a remarkably small number of producers when it is considered that the annual consumption of inks is enormous. Perhaps there is no other branch of manufacturing where the needs of the more than 90,000,000 people of the country are met by half dozen factories. Yet ink manufacturing has not thus far developed a trust, although the majority of the manufacturers have grown immensely wealthy.

The seven ink manufacturers of the Eastern states, all of whom have secured their share of trade through building up prestige and reputation for their products, are rated as follows by Bradstreets: Chas. M. Higgins & Co. of New York, $1,000,000; The Frederick Post Co., Chicago, $750,000; Sanford Mfg. Co., Chicago, $750,000; S. S. Stafford Ink Co., New York, $250,000; Carter's Ink Co., Chicago, $400,000; Davids Ink Mfg. Co., New York, $1,000,000; The Diamond Ink Co., Milwaukee, $75,000.

The manufacture of ink in California was started fourteen years ago through the efforts of the late Frederick Charlton, noted newspaper artist, to obtain an ink suited to his needs. Mr. Charlton interested his brother, Robert T. Charlton, a chemist, and a formula for ink specially adapted to the requirements of artists, architects, engineers and similar professions was worked out for which large sums of money and offers of good positions with desirable salaries attached were made by the Eastern manufacturers. For several years the late Mr. Charlton used these inks in his own work and also supplied fellow artists from his personal stock, until its possibilities as a commercial enterprise were realized and a company organized to manufacture the ink on a large scale.

A factory was finally established in San Francisco and Charlton's inks rapidly gained a foothold on the Coast and worked their way eastward into the New York markets. In a few years they were adopted on their merits by a large number of leading architects and engineers for drafting work and were used exclusively by a score of big ink consumers throughout the country. Charlton's inks are today the standard with the boards of education of the leading Pacific Coast cities.

In the San Francisco fire the company was burned out and lost all of its assets. The still more favorable climatic

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conditions existing in Los Angeles attracted the attention of the company and a new start was made in this city. The company was handicapped for working capital, however, and has not yet recovered from the financial reverses experienced in the Bay City fire. But it has been gradually recovering its markets and in large measure has been able to meet the demand previously created for its products. Its ability to compete in the markets of the Eastern states is due to the fact that the cost of ink manufacture in California is no greater, if as great, as in the East, and the freight rate is an item of no consequence. While the chemicals and coloring pigments used are brought either from the East or from abroad, the bulk and weight of the raw materials, as compared with the great value of small quantities of the finished product, eliminates the freight rate from consideration as a drawback to its profitable production on the Pacific Coast. It is rather a singular fact, also, that the freight rate on ink from New York to the Pacific Coast is $2.25 per hundred pounds, while the rate from this coast to New York is only $1.50 per hundred.

The Frederick Charlton Company has made a specialty of drawing inks for the artist, architect and engineer and on the merits of these inks and moist colors has seen its products supplant those of Eastern manufacture where thorough tests have been made. But the company also has developed other lines of inks and products for special purposes—fountain pen ink, waterproof and permanent inks, lamp black and Chinese white, permanent blue, pastes, etc. All its products are put up in attractive packages and are marketed solely through jobbers and wholesalers.

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Lester D. Hibbard, 906 Westlake avenue, Los Angeles.

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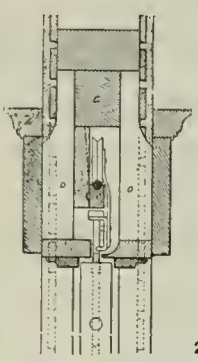

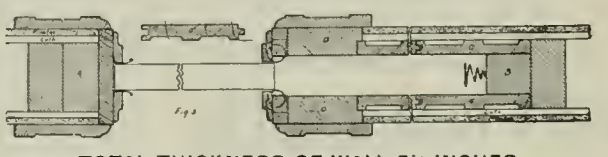

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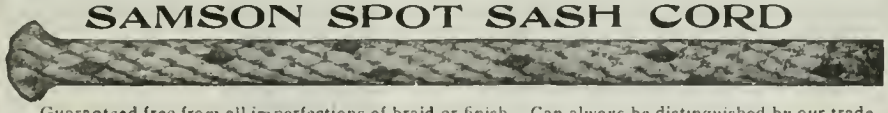

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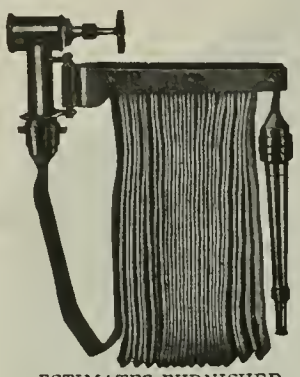

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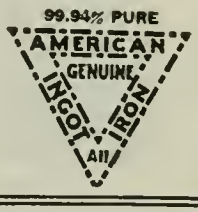

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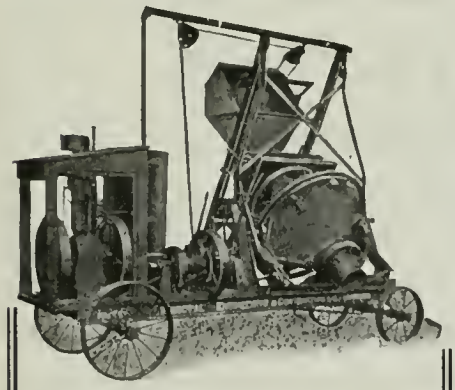

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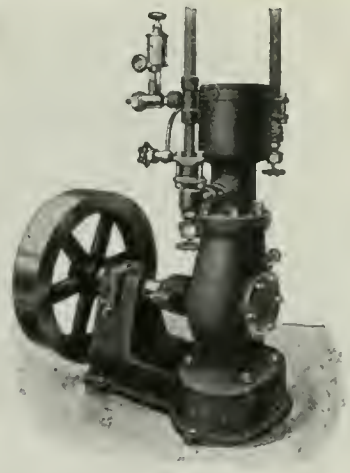

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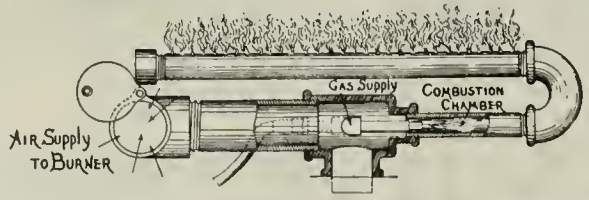

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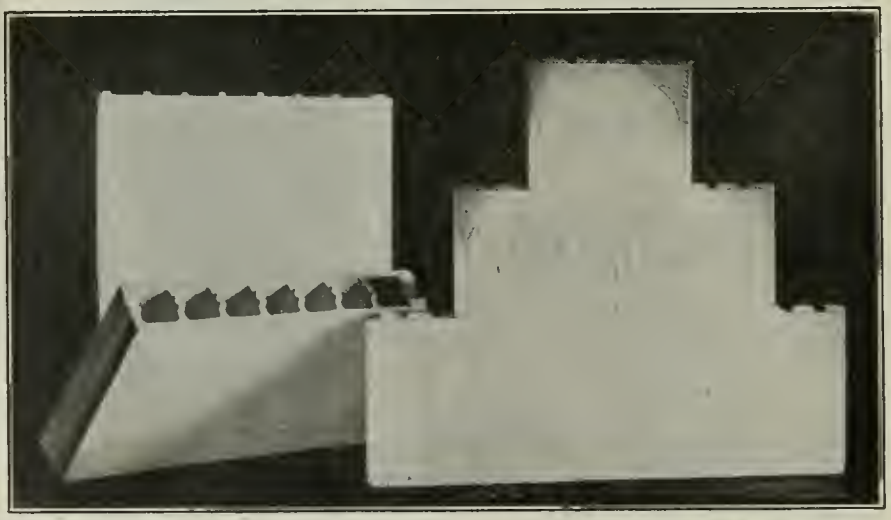

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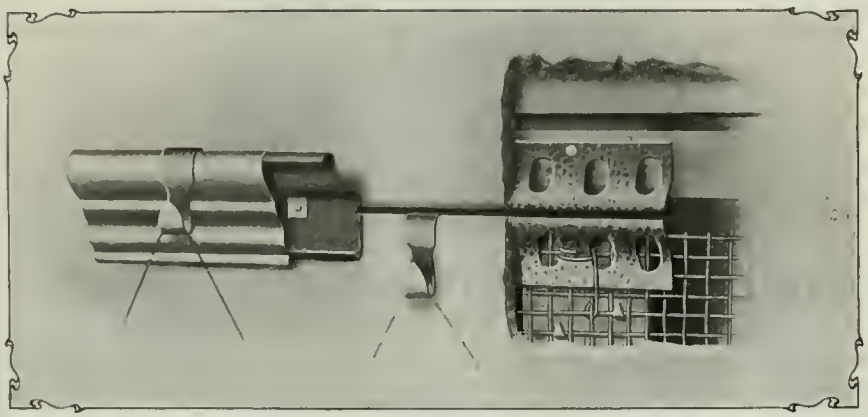

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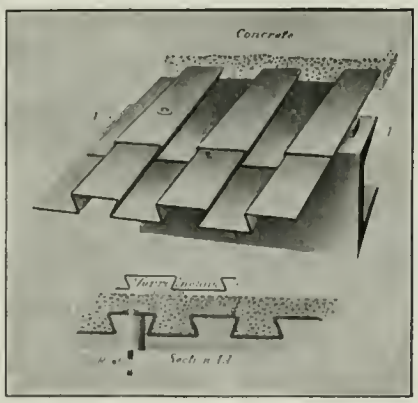

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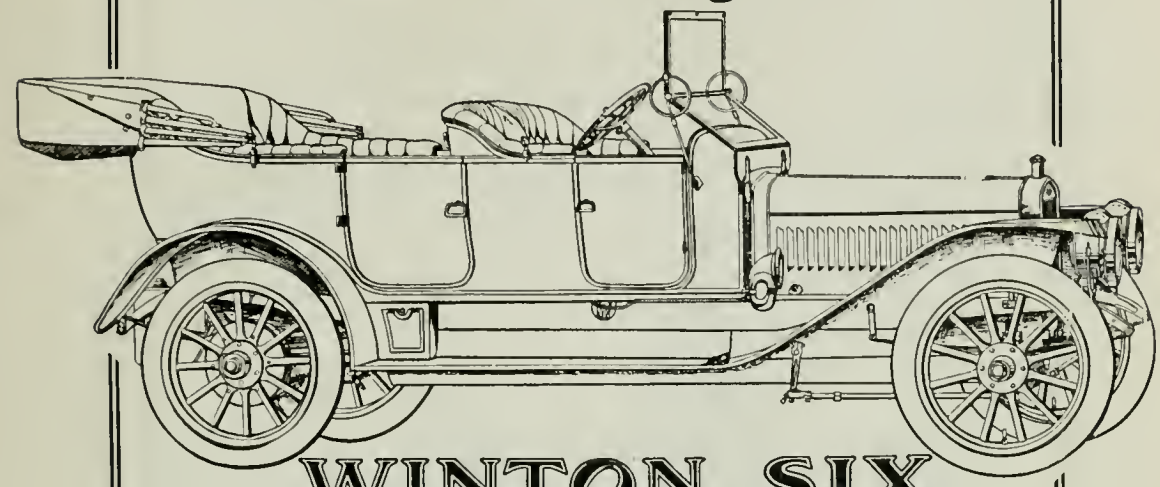

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Housecleaning is a **semi-annual tax** which those without vacuum cleaning must **always pay.** First there is the cost of outside labor brought in; and considerable though this be, it is small when compared to the **damage** loss which housecleaning always means. The carpet which is taken up never looks so well when it is relaid. The furniture which is scuffed and scarred and scratched in moving is permanently lessened in value as well as in beauty. The pictures and mirrors that are broken, as some always are, mean a cash outlay. There is no article of household furniture—nothing in the house from the wall paper to the trim and fixtures that does not suffer a positive money loss at the time of spring and fall housecleaning.

Third, it eliminates the *chief cause* of *all* wear and tear depreciation—*dust, grit and grime;* and doubles or trebles the life of all carpets, rugs, wall-coverings, hangings, upholstery, keeping everything always *bright* and *new*.

The reason why broom-swept carpets and rugs grow worn out and threadbare is that the sand and grit which is tracked over them finds lodgement deep down at the base of the nap. This grit, when examined under the microscope, shows knife-like cutting edges. Walking over the carpet forces the fine nap against these knife-edges and shears it off leaving the bare warp in view. No amount of broom-sweeping can possibly dislodge this cutting grit. Only by the right kind of vacuum cleaning can carpets and rugs be kept free from it. So, not only with floor coverings, but with everything in the house, it will be seen, that dust, grit and grime, more than the wear and tear of use, are the prime causes of depreciation.

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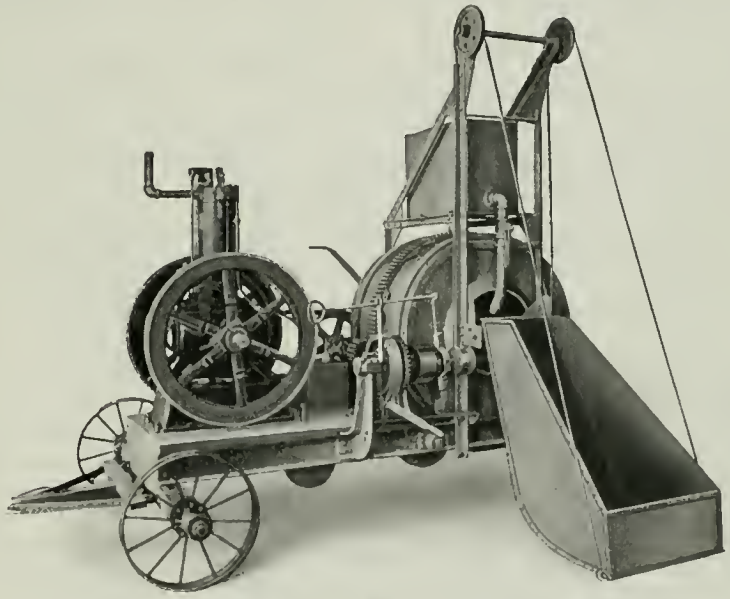

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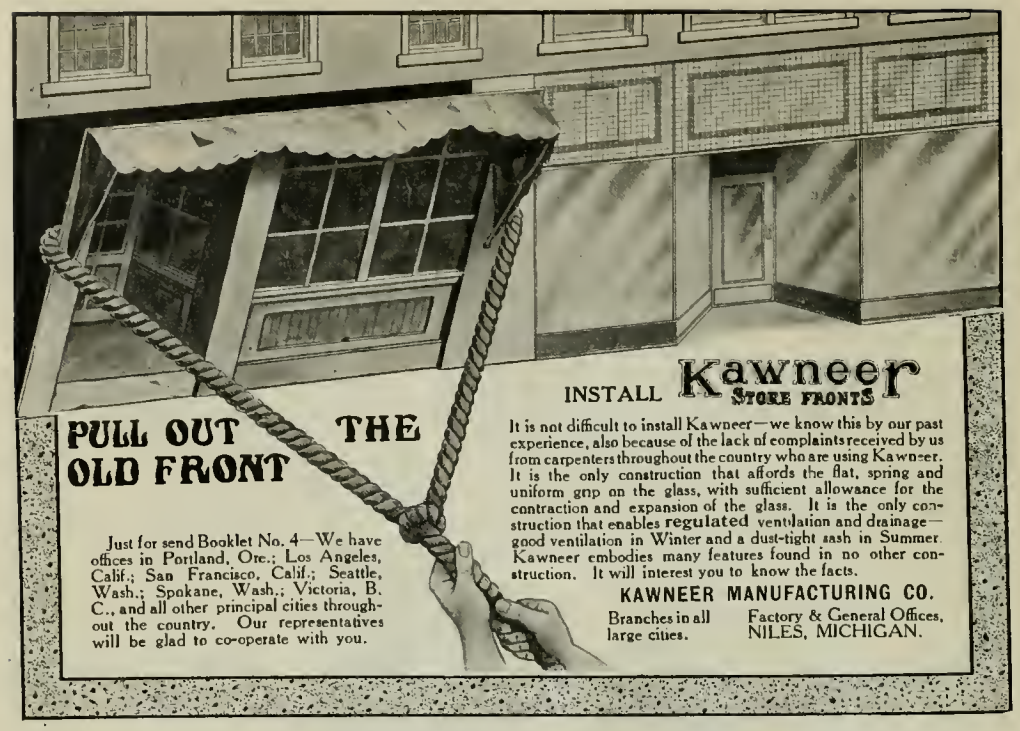

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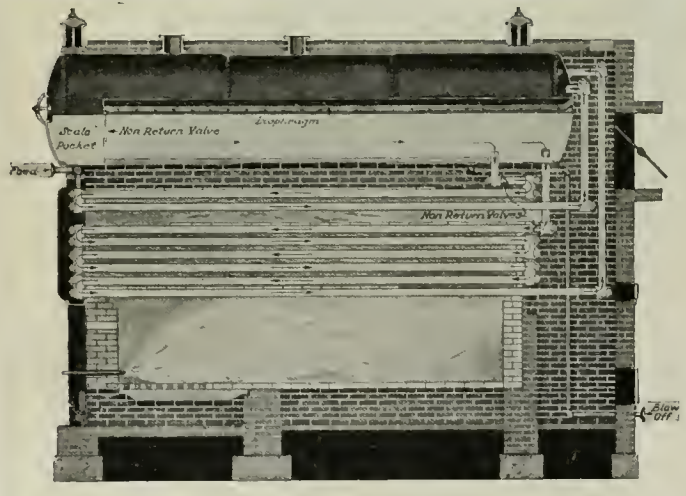

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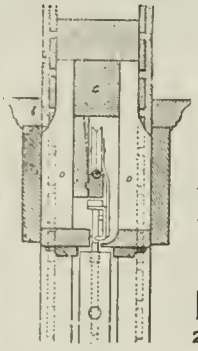

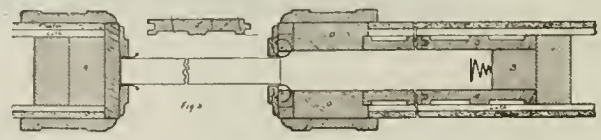

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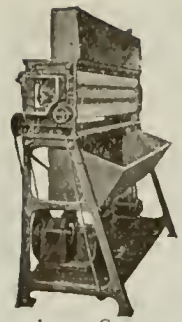

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H. D. Samuel Co....Monadnock Bldg., S. F.
John L. Fox.....207 Monadnock Bldg.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.....38 First St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.
"Protectorine," Compound, sold by Boyd & Moore.....356 Market St., S. F.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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"Imperial" Waterproofing, sold by Baker Bros., San Francisco; Braun Chemical Co., Los Angeles; W. O. Stamps, Portland and B. W. Gaisford, Seattle, Wash.
John L. Fox....207 Monadnock Bldg., S. F.

DOOR HANGERS
Johns Door Hanger Manufacturing Company, 832-838 Folsom St., S. F.
Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DOOR OPENER
G. Rischmuller .....Builders' Ex., S. F. 3442 19th St., S. F.

DOORS—FREIGHT ELEVATOR
"Cross" Counterbalance Automatic, Boyd & Moore, Agents.....356 Market St., S. F.

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents .....356 Market St., S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents.....356 Market St., S. F.
Wells & Spencer Machine Company, 173 Beale St., S. F.

ELECTRICAL CONTRACTORS
Butte Engineering Co..683 Howard St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Electric Appliance Co., 726 Mission St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
Pacific Fire Extinguisher Company, 173 Beale St., S. F.

ELEVATORS
Otis Elevator Company, Stockton and North Point, S. F.
Van Emon Elevator Co..54 Natoma St., S. F.
Wells & Spencer Machine Co., 507 Montgomery St., S. F.

ELEVATOR CARS
Cleveland Art Metal Co., Boyd & Moore, Agents .....356 Market St., S. F.

ELEVATOR DOORS
"Cross" Elevator Doors, Boyd & Moore, Inc., Agents.....356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co., 593 Market St., S. F.

ENGINEERS
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W. W. Breite.....Clunie Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., 593 Market St., S. F.

FIRE EXTINGUISHERS
Goodyear Rubber Company, 587-591 Market St., S. F.
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.

FIREPROOF PARTITIONS
Dodds Interlocking Block Co., 356 Market St., S. F.

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Roehling Construction Co., Crocker Bldg., S. F.

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Jno. G. Sutton Co.....229 Mission St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., San Francisco; Branch Offices, Portland, Seattle and Spokane.

FLOOR SURFACER
John M. Reynolds, 1201 Devisadero St., S. F.

FLOOR VARNISH
Bass-Heuter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
Standard Varnish Works, Chicago, New York and S. F.
Worden-Meeker Varnish Works, S. F. and Oakland

FLOORS—COMPOSITION AND TILE
"Kompolite".....350 Mills Bldg., S. F.

FOUNDATION CONTRACTORS
Locke Foundation Company, 1107 Crocker Bldg., S. F.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit.
Bowser & Co.....612 Howard St., S. F.

GARBAGE CHUTES
Bradshaw Garbage Chute, sold by C. T. Jacobsen.....524 Pine St., S. F.

GAS GRATES AND LOGS
Backus Patent Gas Grates and Logs, Boyd & Moore, Inc., Agents. 356 Market St., S. F.
McGeorge and Cooper Mfg. Company, 322 Sheldon Bldg., S. F.

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California Art Glass Works, 768 Mission St., S. F.
United Glass Co.....115 Turk St., S. F.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co....153 Berry St., S. F.
California Bldg., Material Co., Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
Natomas Consolidated, Peoples' Savings Bank Bldg., Sacramento

HARD WALL PLASTER
Empire Hard Wall Plaster Co., Pacific Bldg., S. F.
Reno Hard Wall Plaster, sold by Western Building Material Co., 430 California St., S. F.
Standard Supply Company, First St. and Broadway, Oakland

HARDWOOD FLOORING
Boyd & Moore.....356 Market St., S. F.
Dieckmann Hardwood Co., 244 California St., S. F.
Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
Niehaus & Co.....548 Brannan St., S. F.
Parrott & Co.....320 California St., S. F.
Strable Mfg. Co., First St., betw. Washington & Clay, Oakland
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD PANELS
Niehaus & Co.....548 Brannan St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD VENEER PANELS AND DOORS
E. A. Howard & Co.....Howard St., S. F.

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Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
Humphrey Co., 565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Thos. Thieben & Co.....585 Mission St., S. F.

HEATING AND VENTILATING
Gilley-Schmid Co., Inc., Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
Machinery and Electrical Co., 351-353 N. Main St., Los Angeles
Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.

HINGES
Stanley's Ball-Bearing Hinges, Stanley Co., New Britain, Conn.,

ICE MAKING MACHINES
"The Wizard," sold by the De Laval Dairy Supply Co., Drumm and Sacramento streets, San Francisco.
Triumph Ice Machine Co., H. F. Lyon, Agent, 581 Monadnock Bldg., S. F.

INK FOR DRAWING
Frederick Charlton Company, Los Angeles, Cal.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 418 Montgomery St., S. F.
Smith, Emery & Co., Inc., 651 Howard St., S. F.

INSURANCE
David Duncan .....340 Sansome St., S. F.

INTERIOR DECORATING
A. C. Wocker.....1370 Sutter St., S. F.
L. Tozer & Son Co., 228 Grant Ave., S. F.
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Western Builders' Supply Co., 680 Mission St., S. F.

KITCHEN EQUIPMENT
John G. Ils & Co.....827 Mission St., S. F.

LANDSCAPE GARDENING
McRorie & McLaren, Westbank building, San Francisco.

LIME
Holmes Lime Company, Mutual Savings Bank Bldg., S. F.
Standard Supply Co., First St. and Broadway, Oakland
Western Lime & Cement Co., 268 Market St., S. F.

LIGHTING FIXTURES
Adams & Hollopeter....745 Mission St., S. F.
J. F. Kelly Company, 723 7th St., Oakland
The Palmer Shop.....1345 Sutter St., S. F.

LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents, 356 Market St., S. F.

LUMBER
Santa Fe Lumber Co., Seventeenth and De Haro Sts., S. F.

MACHINERY AND MACHINERY SUPPLIES
Machinery and Electrical Co., 351 N. Main St., Los Angeles

MANTELS
Mangrum & Otter.....561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

MARBLE
Columbia Marble Co....268 Market St., S. F.

MASONRY CONTRACTORS
Farrell & Reed.....Gunst Bldg., S. F.
Ferdinand Wagner .....609 Waller St., S. F.

METAL AND STEEL LATH
Roebling Construction Co., Crocker Bldg., S. F.

METAL CEILINGS
Berger Mnfg. Co.,....1120 Mission St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office, 722 Merchants Exchange Bldg., S. F.
Rulofson Metal Window Works, Eighth and Brannan Sts., San Francisco
Waterhouse & Price.....59 Third St., S. F.
Zahner's Monarch Hollow Metal Doors and Trim, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

METAL FIRE PROOF PARTITIONS
Collins Steel Partition & Lathing Co., 757 Monadnock Bldg., S. F.

METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent.....Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

OIL BURNING PLANTS
Fess System Co., Inc., 125-129 Hayes St., S. F.

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C. F. Weber & Co.....365 Market St., S. F.
Whitaker & Ray-Wiggin Co., San Francisco and Los Angeles.

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J. G. Braun.....Chicago and New York
California Artistic Metal and Wire Company, San Francisco

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Golden Gate Structural & Ornamental Iron Works.....1479 Mission St., S. F.
C. J. Hillard Company, Inc., 211-215 Eighth St., S. F.
Sartorius Co., Inc...16th and Utah Sts., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati

PAINT FOR CEMENT
Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Vitrolite Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
Worden-Meeker Varnish Co., S. F. & Oakland

PAINT FOR STEEL STRUCTURES
Detroit Superior Graphite Paint, manufactured by Detroit Graphite Company. C. W. Pike Company, Coast Sales Agents, 22 Battery St., S. F.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Goheen Carbonizing Coating, sold by Sherman Kimball, Hooker & Lent building, S. F.
Neponset Paints, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.,.....82 Second St., S. F.

PAINTS, OILS, ETC.
Bass-Hueter Paint Company, Mission, near Fourth St., S. F.
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., S. F. and Los Angeles
R. N. Nason Company.....San Francisco
Paraffine Paint Co.....38-40 First St., S. F.
Standard Varnish Works, represented by W. P. Fuller & Co..S. F. and Los Angeles
Worden-Meeker Varnish Co..S. F. & Oakland

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Walter C. Scott.....558 Market St., S. F.

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Alex Coleman .....706 Ellis St., S. F.
J. E. O'Mara.....447 Minna St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.

PLUMBING FIXTURES
Crane Co....Second and Brannan Sts., S. F.
Haines, Jones & Cadbury Co., 851-859 Folsom St., S. F.
Jno. Douglas Co.....571 Mission St., S. F.
J. L. Mott Iron Works, D. H. Guliek, selling agent .....135 Kearny St., S. F.
N. O. Nelson Mfg. Co., 978 Howard St., S. F. 406 E. 4th St., Los Angeles
Geo. H. Tay Company, 617 Mission St., S. F.

PLUMBING SUPPLIES
California Steam & Plumbing Supply Co., Fiftb and Bluxome Sts., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

PULLEYS, SHAFTING, GEARS, ETC.
Meese and Gottfried Company..... .....San Francisco, Seattle, Portland, Los Angeles

RAILROADS
Southern Pacific Co.....Flood Bldg., S. F.
Western Pacific Railroad...Mills Bldg., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co.....365 Market St., S. F.
Lilley & Thurston.....82 Second St., S. F.

ROOFING AND ROOFING MATERIALS
J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.
Pluvinox Roofing, sold by Boyd & Moore, Inc.....356 Market St., S. F.

ROOFING TIN
"Scott's Extra Coated," manufactured by Follansbee Bros. Co.....Pittsburg, Pa.
Meurer Bros. Co., A. H. McDonald, Coast Representative.....628 Third St., S. F.

ROOFING AND ROOFING MATERIALS
"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Balboa Bldg., S. F.
Ford & Malott, Mariposa St., at Iowa St., S. F.
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
Genasco Ready Roofing, sold by Parrott & Co.....320 California St., S. F.
H. D. Samuel Company, 1054 Monadnock Bldg., S. F.
Harry Larkin,.....Builders' Exch., S. F.
Mackenzie Roof Co., 425 15th St., Oakland
Meurer Bros. Co., A. H. McDonald, Coast Representative.....628 Third St., S. F.
Pioneer Roll Paper Co.....Los Angeles
Western Builders' Supply Co., 680 Mission St., S. F.

RUBBER TILING AND MATTING
Goodyear Rubber Co...587 Market St., S. F.
New York Belting & Packing Co., 129 First Street, S. F.

SAFES
Howe Scale Company, 333 Market St., S. F.

SAND
Del Monte White Sand, sold by Pacific Improvement Company, Main office, Crocker Bldg., S. F.

SASH CORD
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCAGLIOLA
California Scagliola Co., F. Mayer, 68-70 Clara St., S. F.

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Whitaker & Ray-Wiggin Co., 776 Mission St., S. F.; 209 E. Seventh St., Los Angeles.

SHEATHING AND SOUND DEADENING
Neponset Waterproof Building Papers, Neponset Florian Sound Deadening Felt, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
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Berger Mfg. Co.....1120 Mission St., S. F.
Dunlevy & Gettle....79 City Hall Ave., S. F.

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Boyd & Moore.....356 Market St., S. F.
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Judson Manufacturing Company, 819 Folsom Street, San Francisco
Mortenson Construction Co., 19th and Indiana Sts., S. F.
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Western Iron Works....125 Beale St., S. F.
Woods & Huddart.....356 Market St., S. F.

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Judson Manufacturing Company, 819 Folsom Street, San Francisco
Woods & Huddart.....356 Market St., S. F.

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STORE FRONTS
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Thorne Hold-Fast Metal Store Front Construction, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

SURVEYORS
Sanborn & Corinson....251 Kearny St., S. F.

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Dunlevy & Gettle....79 City Hall Ave., S. F.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter....561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

TILE FOR ROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.

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The Mosaic Tile Company, 230 8th Avenue, San Francisco

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Meurer Bros. Co., A. H. McDonald, Coast Representative.....628 Third St., S. F.

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J. P. Raymond.....397 Sutter St., S. F.

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"Palmetto Twist," sold by H. N. Cook Belting Co.....317 Howard St., S. F.

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C. F. Weber & Co....365 Market St., S. F.
Ericsson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents..356 Market St., S. F.

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Dieckmann Hardwood Co., Welch Bldg., 244 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

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Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

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"Kompolite".....350 Mills Bldg., S. F.

WALL BEDS
The Turner Wall Bed, sold by California Plate and Window Glass Co., San Francisco and Los Angeles. Mission near 5th, S. F.
Marshall & Stearns Co., 1154 Phelan Bldg., S. F.

WATERPROOF FINISHES
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.

WATERPROOF FINISHES—Continued
Glidden's French Caen Stone Finish and Glidden's Waterproof Flat Finish, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
"Trus-Con" Finish, sold by Western Lime & Cement Co.....268 Market St., S. F.

WATERPROOFING FOR CONCRETE, ETC.
"Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
Glidden's Concrete Floor Dressing and Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Neponset Waterdyke Felt and Compound, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents Lilley & Thurston Co., 82 Second St., S. F.
Parrott & Co.....320 California St., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Te-Pe-Co Waterproofing, sold by H. G. Clinton, 34 Ellis St., S. F.; Bass Hueter Paint Co., Pacific Coast Distributors.
The Building Material Co., Inc., 587 Monadnock Bldg., S. F.

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Kewanee System, Simonds Machinery Co., sole agents....12 and 14 Natoma St., S. F.

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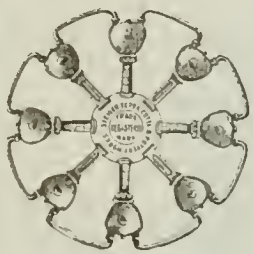

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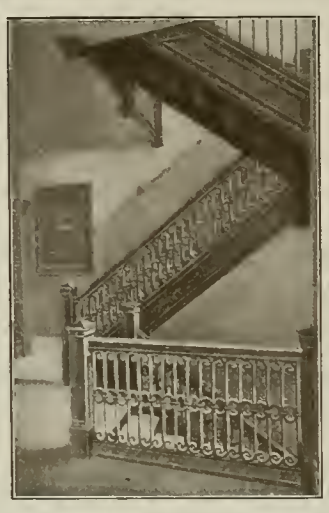

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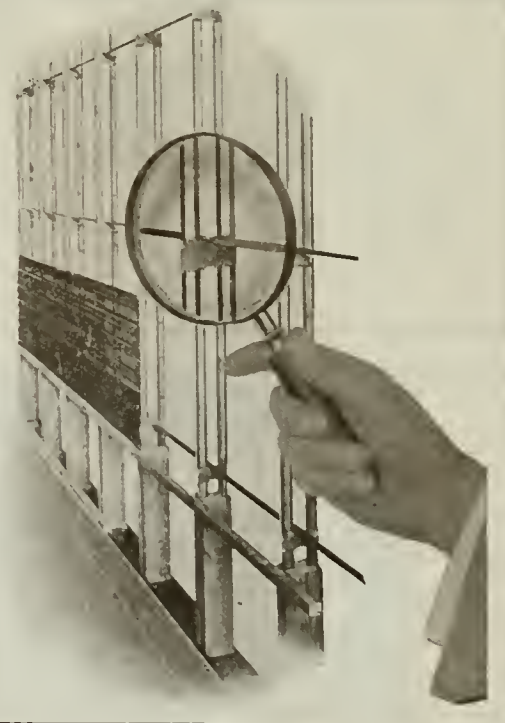

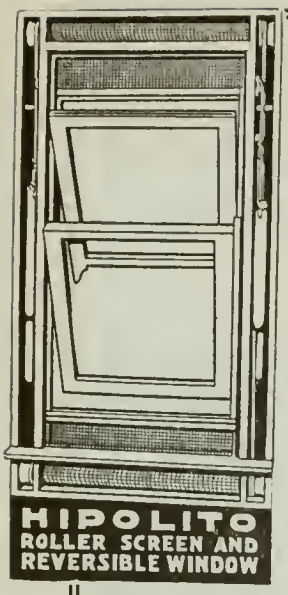

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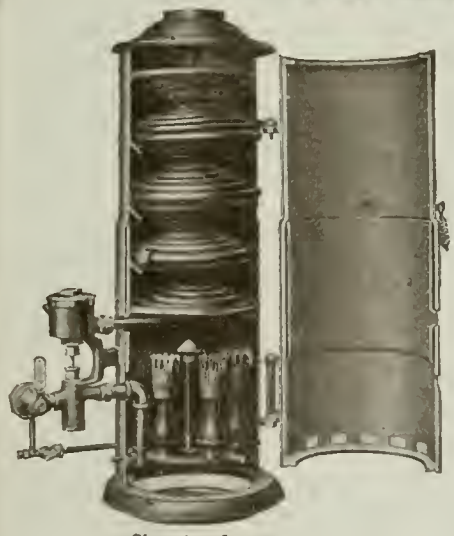

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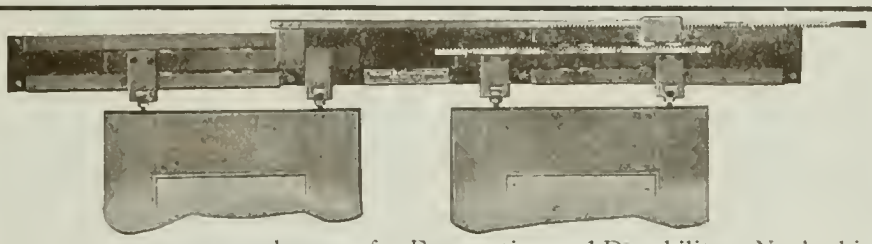

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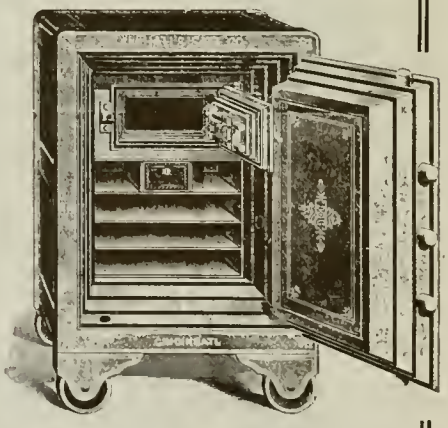

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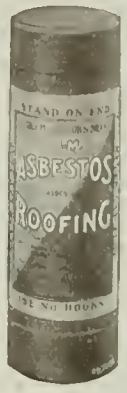

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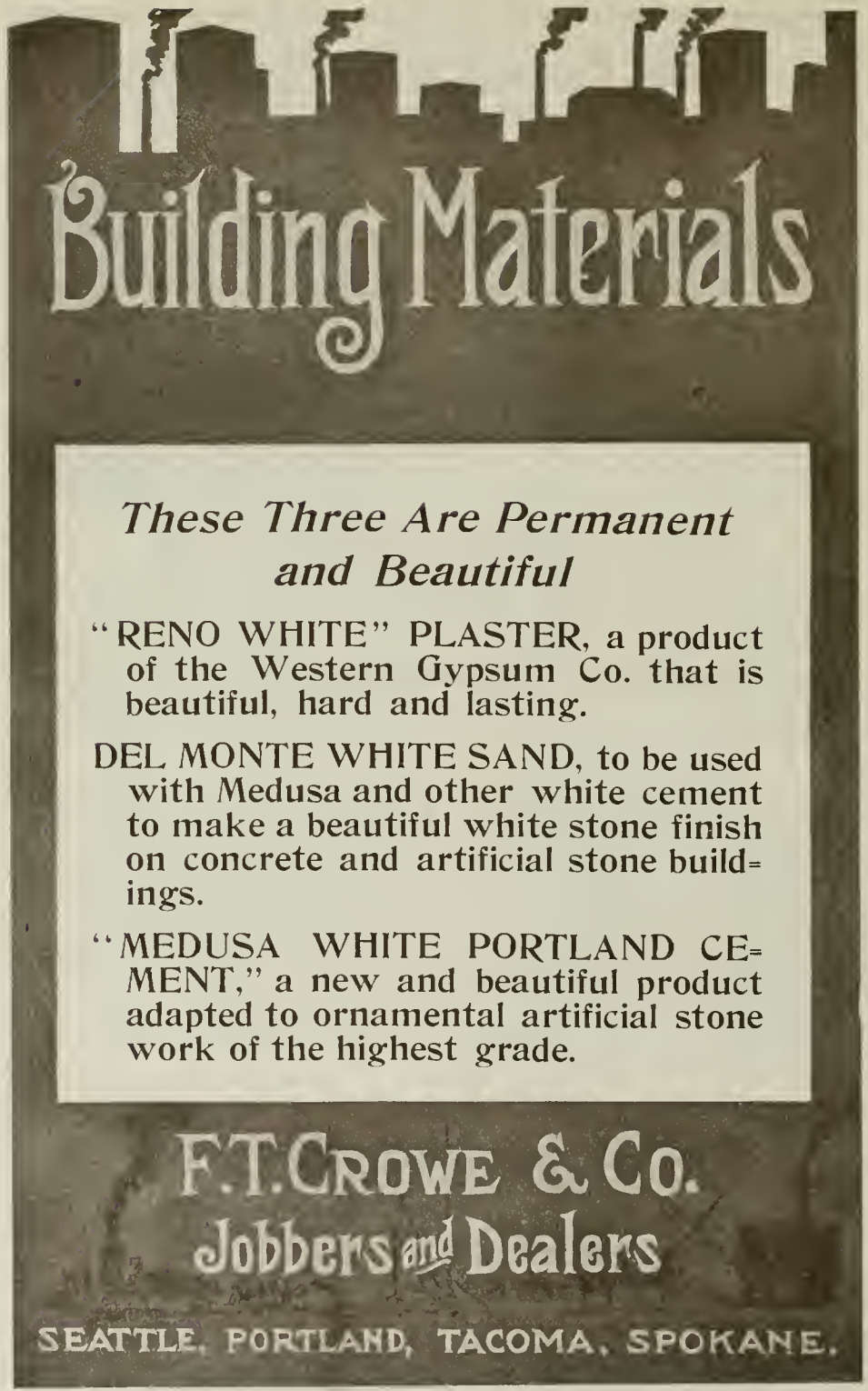
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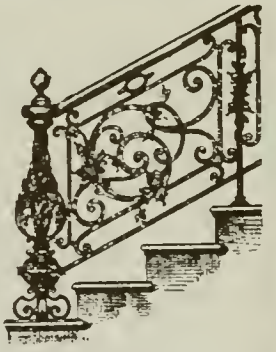

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Frontispiece
The Architect and Engineer
September, 1911

THE NEW ORPHEUM THEATER AND OFFICE BUILDING, LOS ANGELES

G. Albert Lansburgh, Architect

THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXVI. SEPTEMBER, 1911. NO. 2.

Group on Marquise, Orpheum Theater, Los Angeles
Executed by D. and J. J. Mora

The New Orpheum Theater Building, Los Angeles*

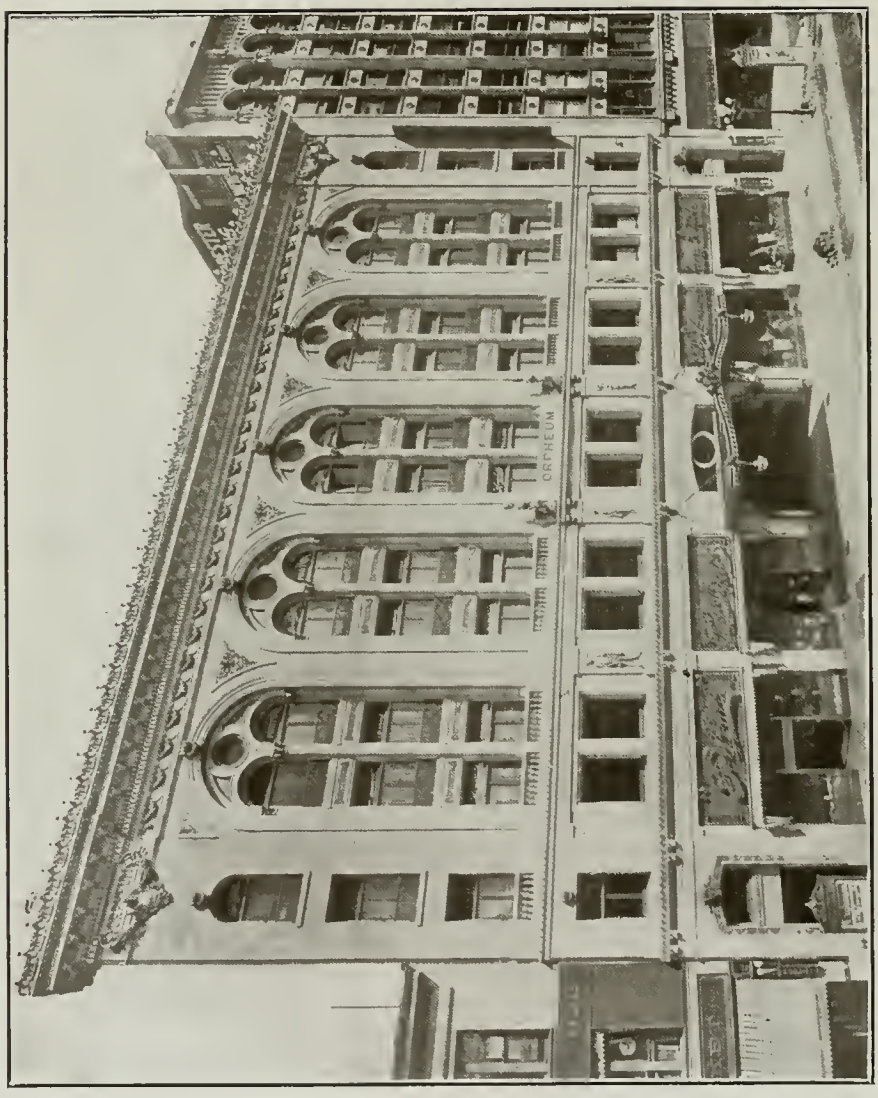
By WILLIAM HAMILTON CLINE

WHEN the architect was called upon to solve the problem of indicating to the public that behind a purely commercial building there was to be placed a gorgeous and beautiful rendevouz for the Muses, the difficulties were paramount.

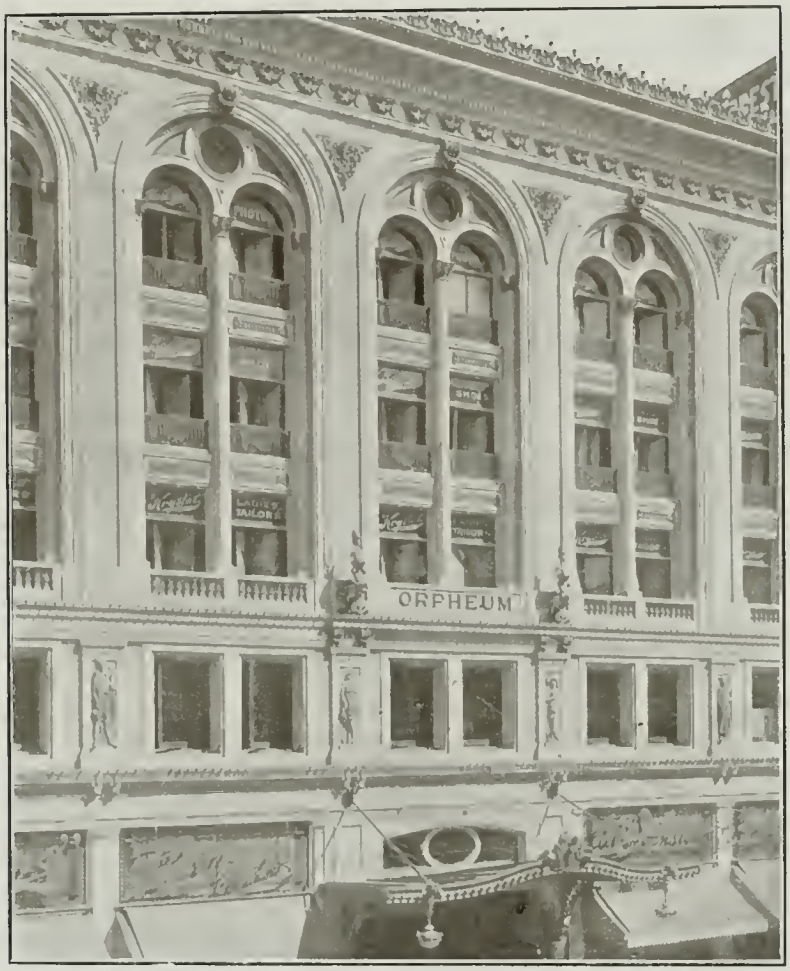
The lines of the facade were necessarily determined by the stores and offices, and the sordid character of these requirements were surely far from those called for by a vaudeville theater. It was, consequently, only by the artistic grouping and careful choice of details and colorings that he could give to the composition the attractiveness and character that so forcibly tells of the existence of the stage and auditorium and especially that this stage is for the modern vaudeville.

The facade is replete with color, but so beautifully harmonized, that it satisfies the taste and leaves the spectator delighted with this new venture in polychrome designing. The Orpheum has the first colored facade to be erected in Los Angeles, and one of the first in the West. Its beautiful semi-glazed terra cotta is the first of its kind to be made in California and the most many colored yet produced in one burning, each new color formerly requiring a separate firing.

*In the execution of this work Mr. Lansburgh was represented by R. B. Young & Son of Los Angeles, as resident architects.



Broadway Front, Orpheum Theater and Office Building, Los Angeles
G. Albert Lansburgh, Architect *Carl Leonardt, General Contractor*



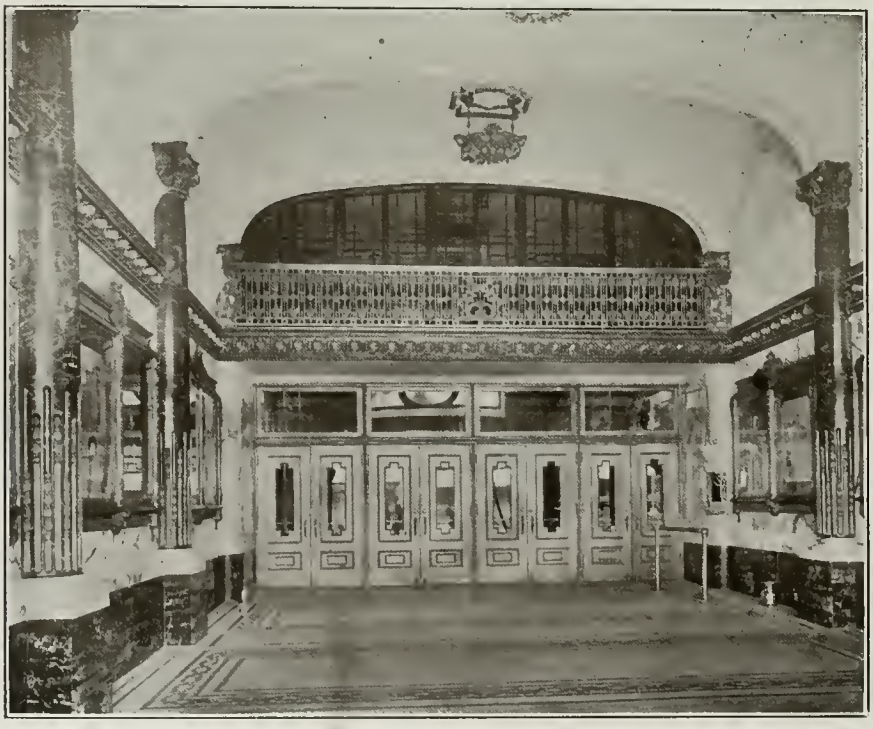
Detail of Broadway Front, Orpheum Theater, Los Angeles
Riverside Portland Cement Used

The four figures in the panels were modeled by the late Domingo Mora, an eminent Spanish sculptor of New York, who became greatly interested in Mr. Lansburgh's effort to display Music, Song, Comedy and the Dance in a modern way, so characteristic of the vaudeville. The hand of the artist is plainly visible in the execution of the work and Mr. Lansburgh's colors are certainly most harmonious.

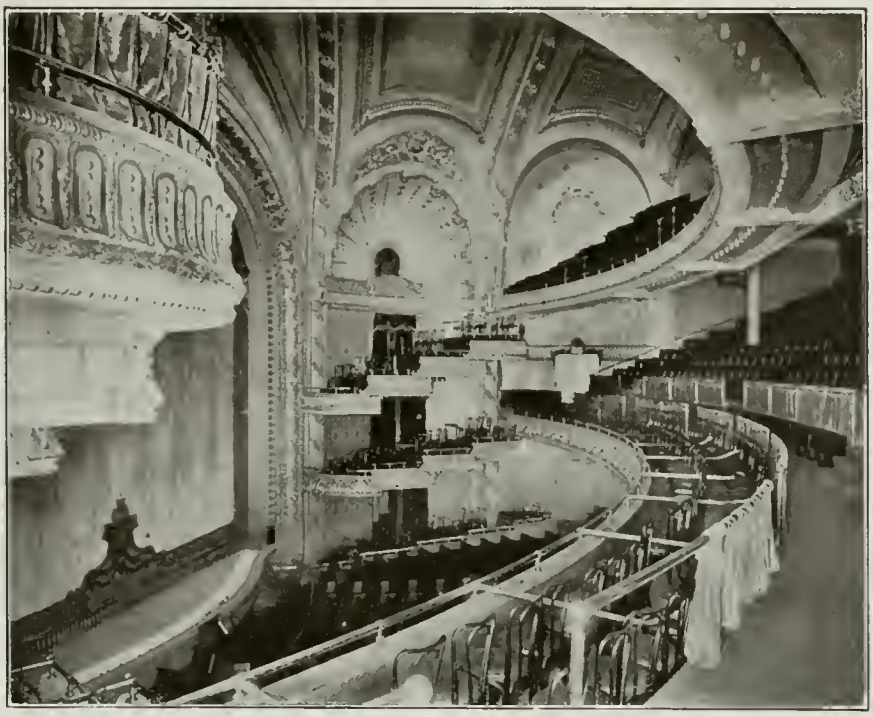
These, with the cornices, spandrels, keys and freezes, are well studied, and the harps, bells and masks, with their colors and clean cut modelling, have successfully produced the required character.

The marquise of wrought iron over the entrance, the wrought iron lamps and the bronze frames finish the picture and attract us forcibly to the most beautiful of lobbies, handsomely finished in expensive imported marble from the Nile and Italy, a Caen stone vaulted ceiling and lovely bronze frames and balcony rails, most luxuriantly illuminated with very

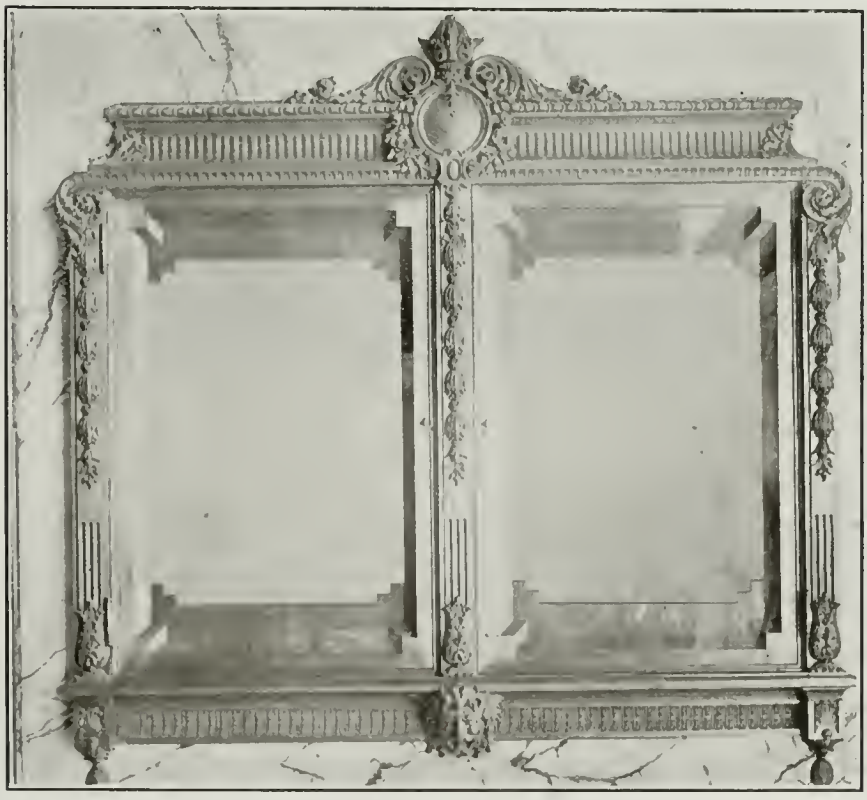
Marquise of Orpheum Theater, Los Angeles
Executed in Cast Iron by California Artistic Metal and Wire Co., San Francisco
G. Albert Lansburgh, Architect



Foyer, Orpheum Theater, Los Angeles
G. Albert Lansburgh, Architect



View From the Balcony, Orpheum Theater, Los Angeles
G. Albert Lansburgh, Architect

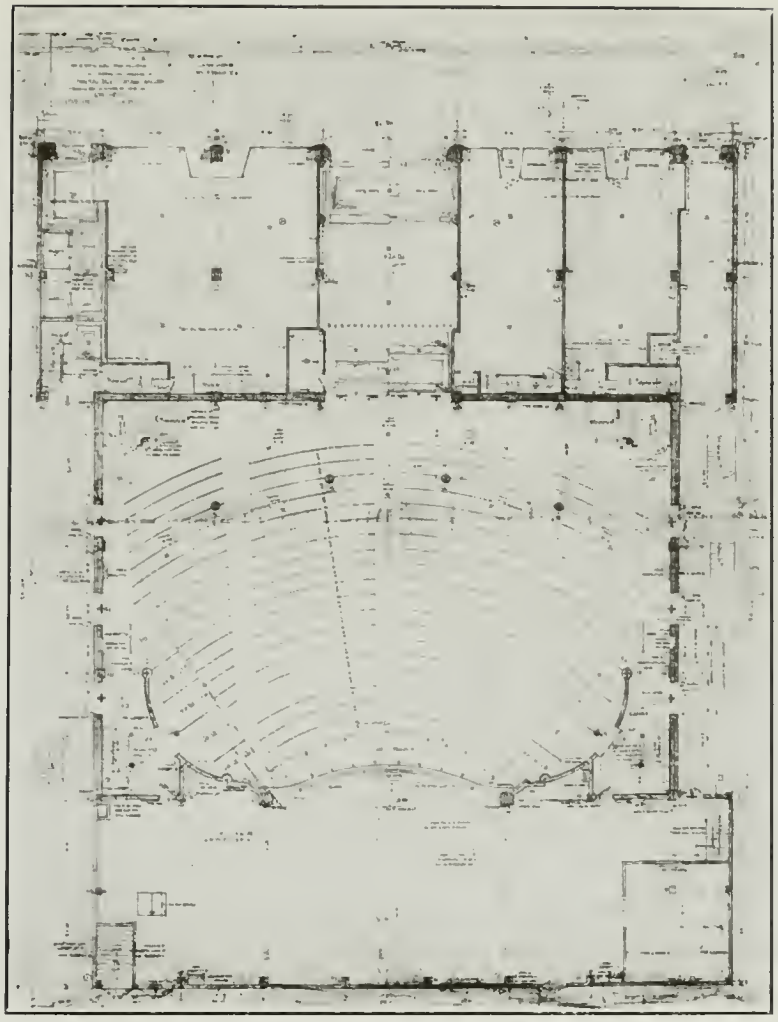


Ornamental Cast Iron, Bronze Plated Photograph Cabinets, Orpheum Theater, Los Angeles
Executed by California Artistic Metal and Wire Co., San Francisco
G. Albert Lansburgh, Architect

Detail of Foyer, Orpheum Theater, Los Angeles
G. Albert Lansburgh, Architect

beautiful and original chandeliers, the costliest of mosaic floors and a box office window in carved marble that without any trouble relieves us of the price of admission and ushers us into the most satisfactory and charming auditorium that the West has yet seen, so vast, and yet so homelike, that the last row seems to be on top of the orchestra leader's rail, so deceptive is the arrangement of the floor and so perfect the sight lines and accoustics.

There are 2000 good, comfortable seats in the auditorium divided among the orchestra and parquet sections, two balconies and thirty-nine boxes, and so that there might be a precipitated exit in case of emergency,

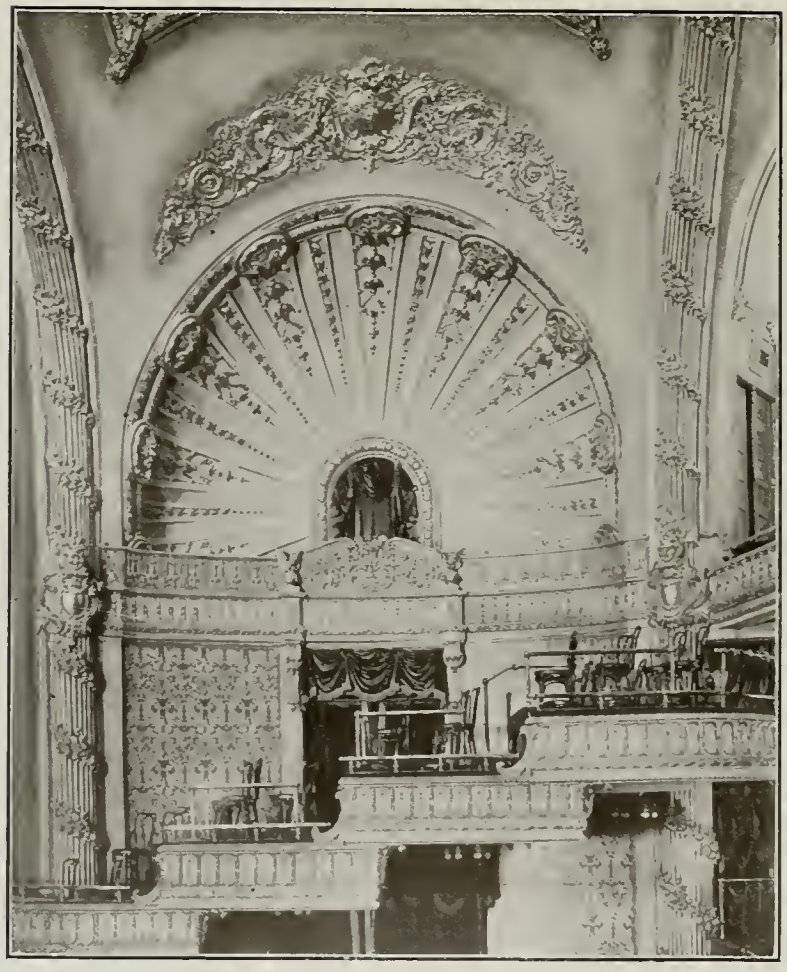


First Floor Plan, Orpheum Theater, Los Angeles
G. Albert Lansburgh, Architect

there are twenty-two exits leading to the large lateral courts and to the streets, both in front and in the rear of the building.

There is certainly no need of a panic in this most fireproof of buildings, which has nothing in it to burn except the seats; even the scenery and draperies are treated with fireproofing liquids, and the entire building, except above the audience, is equipped with a network of fusible link automatic sprinklers which fuse at the least exaggerated heat from a fire and quench it with showers of water from the pressure tanks above the roof. The entire building is of steel frame with reinforced concrete floors and walls.

As to the lines of the interior, the scale, detail and coloring of the decorations, the architect has said the last word in modern theater designing. There is no old-fashioned proscenium arch or sounding board; no dual



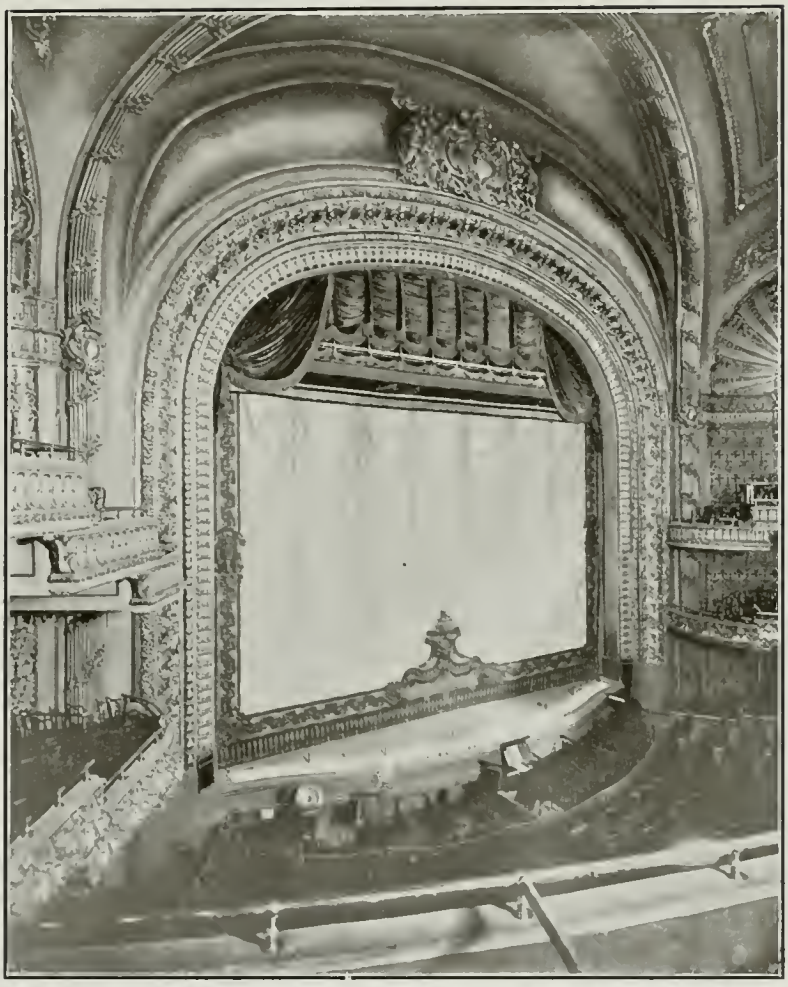
Detail of Upper Boxes, Orpheum Theater, Los Angeles
G. Albert Lansburgh, Architect

composition of the ceiling, but a continuous enveloped scheme so thoroughly tied together that each element is in its place and each feature in its correct value. There is nothing that could be left out, nor does one feel the necessity to add a single feature to the design. The galleries and balconies are built on the cantilever principle, with columns well in the rear of the house, so that the view is unobstructed.

The general color scheme is a warm roseate old gold and ivory, highlighted with bronze and burnished gold, which contrasts most successfully with the gendarme blue draperies and old rose curtain.

There are several innovations worthy of note, such as the indirect lighting done by means of concealed lights and reflectors artfully hidden in the domes and penetrations of the ceilings.

The heating, ventilating and cooling of the auditorium is done by a system of supply and exhaust fans driven by electric motors operating in a plenum or air chamber under the auditorium floor—for the supply—and

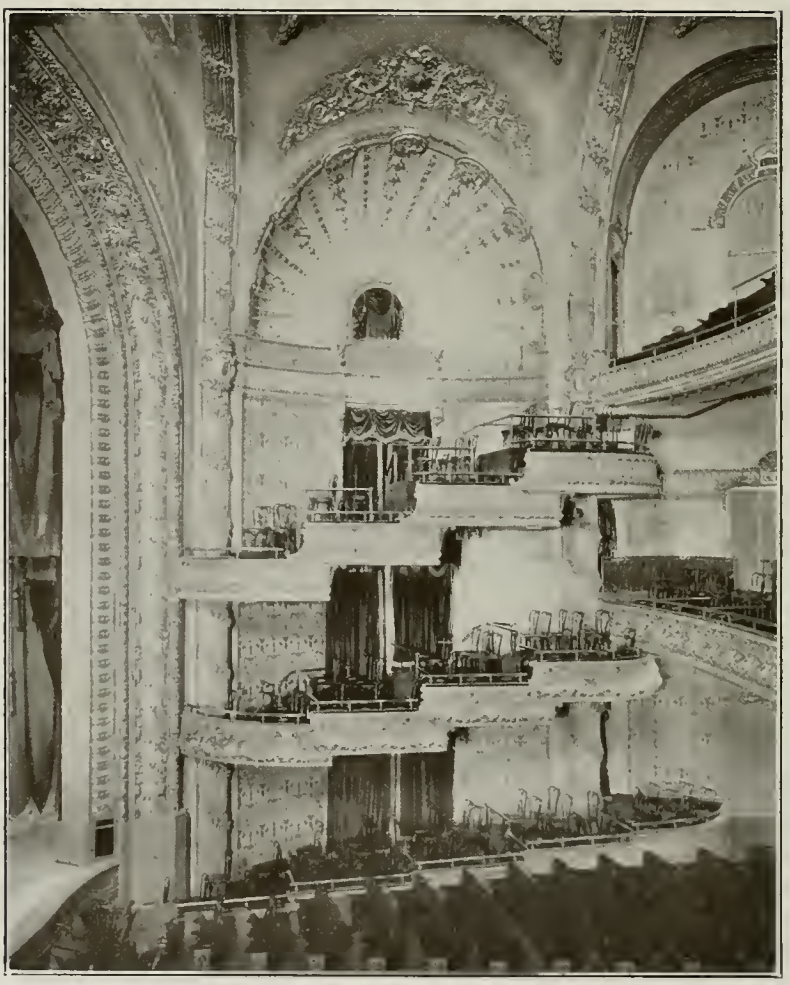


Proscenium Arch, Orpheum Theater, Los Angeles
G. Albert Lansburgh, Architect

above the ceiling, for the exhaust. The air is thoroughly washed in coke washers over which a cataract of water is constantly falling for the purpose of ridding it of dust and impurities. The air is then driven over coolers or heating coils, as the necessity may be, and the temperature regulated by thermostatic automatic regulators placed at different points in the theater.

A feature of great interest to the ladies is the parlor and retiring rooms placed on the mezzanine, between the orchestra floor and balcony, and very accessible from either level. This parlor has a balcony or loggia overlooking the entrance lobby, so that the ladies may await their escorts and still be completely out of the way of the throng.

So that the men may have the comfort of a smoke during the entre-act, a large and elegantly furnished lounging room has been fitted up in the basement immediately under the lobby. There are also coat and hat check rooms for men and women on each floor, and toilets, lavatories and retiring rooms on each balcony and gallery.



Interior Orpheum Theater, Los Angeles, Showing Arrangement of Boxes
Steam Heating and Ventilating Installed by Eugene Murray, Los Angeles
G. Albert Lansburgh, Architect

Not only is the public comfortably housed, but the artists are very carefully considered. The dressing rooms are models, equipped with mirrors, electric lights, metallic dressing tables, hot and cold water, perfect ventilation, and attached thereto are two shower baths, fitted up most carefully, one for the women and one for the men. Even to the performing animals do these details continue, there being an especially arranged den with tanks for their care.

Some of the main points of interest in the design and construction of the building are:

The lot is 122 x 150 feet.

The auditorium measures 100 feet in width by 70 feet in depth, and its average height is 70 feet.

The stage measures 32 feet in depth and 110 feet in width.

The proscenium arch is 40 feet wide by 38 feet high.

The gridiron is entirely of steel, and is 70 feet above the stage.

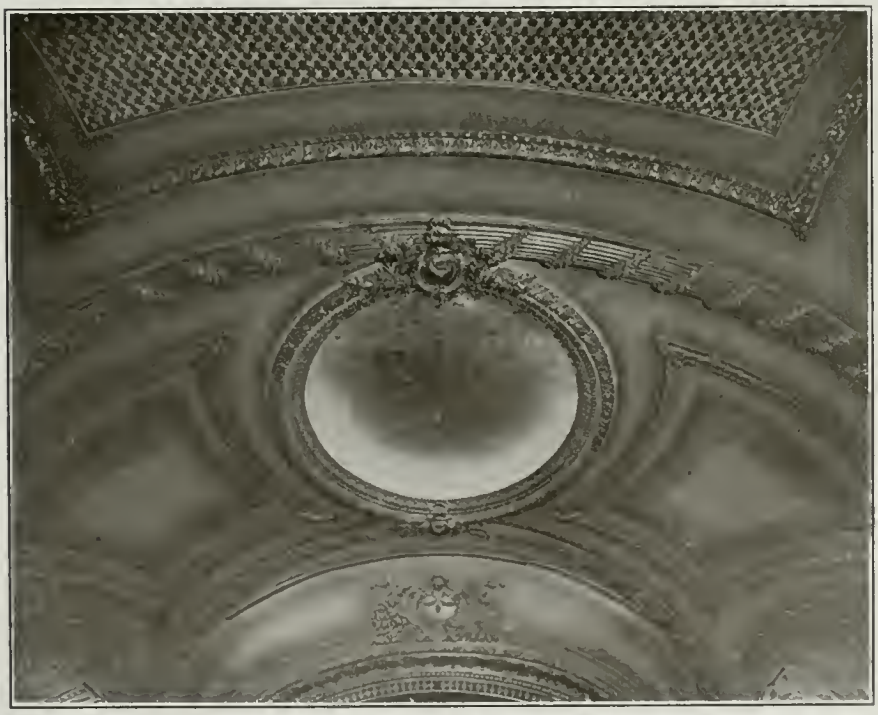
The cost of the building is about $350,000.

G. Albert Lansburgh, Architect

Ladies' Parlor, Orpheum Theater, Los Angeles
Plumbing by James W. Hellman, Los Angeles

Gentlemen's Smoking Room, Orpheum Theater, Los Angeles

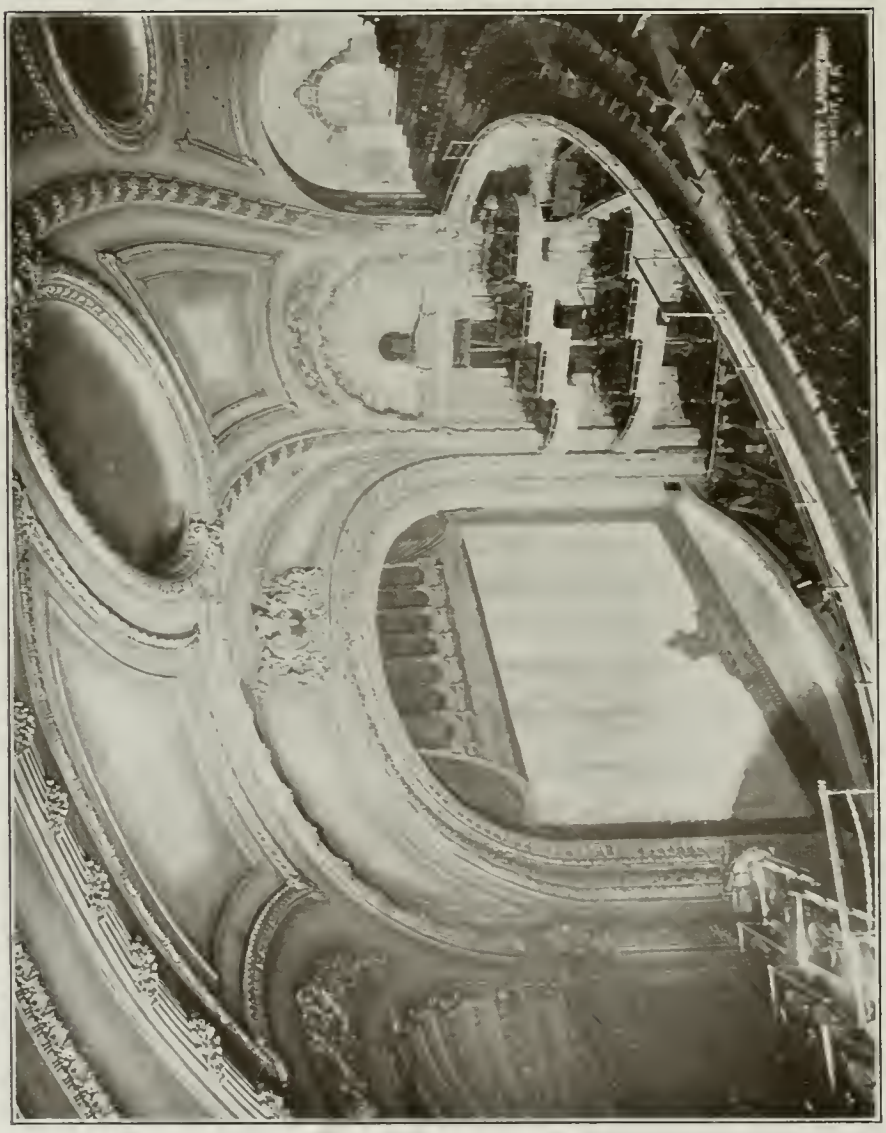
Detail of Proscenium Arch, Orpheum Theater, Los Angeles

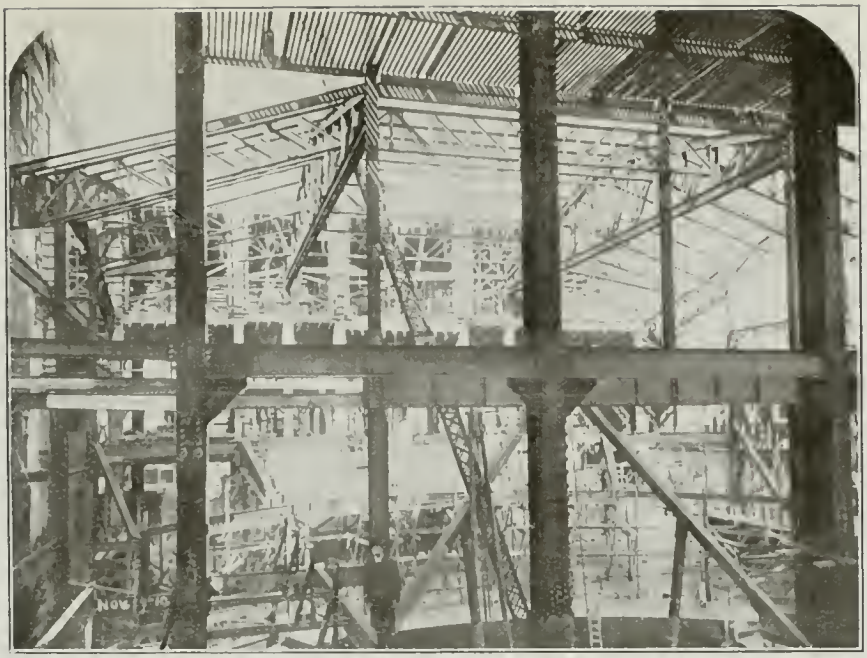


Detail of Ceiling, Orpheum Theater, Los Angeles

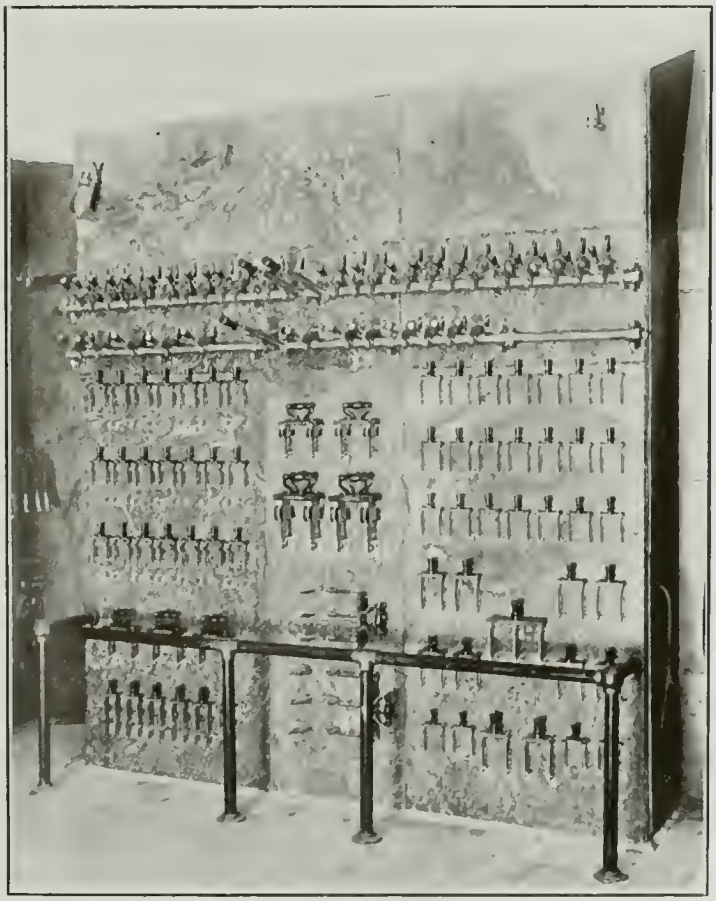
Interior Orpheum Theatre,
Los Angeles

G. Albert Lansburgh, Architect





Progress Photo of Orpheum Theater Structural Steel and Elevators by Llewellyn Iron Works, Los Angeles



Main Stage Switchboard, Orpheum Theater, Los Angeles *Installed by Max D. Baron*

Indirect Lighting Fixture in Main Lobby, Orpheum Theater, Los Angeles
All Fixtures Manufactured and Installed by Thomas Day Company, San Francisco
G. Albert Lansburgh, Architect

Comedy *Dance* *Song* *Music*
Four Panels on Exterior of Orpheum Theater, Modeled by Domingo Moro, and Executed in Architectural Faience by Gladding, McBean & Company
G. Albert Lansburgh, Architect

An Architect's Tribute to Domingo Mora

By G. ALBERT LANSBURGH

A SAD loss came to the architects and art lovers of San Francisco when Domingo Mora, artist sculptor, died, on the twenty-sixth day of last July; a man pre-eminently an artist, and, although seventy odd years of age, as young in spirit as a boy, with a virile imagination and a decided trend to the absolutely modern expression of art.

His work has been a long career of successes, lacking, probably, the brilliant outburst that periodically marks the careers of some men, but full, nevertheless, of constant and marked attainments.

The affectionate nature, the interested and continually helpful disposition, made the man the most lovable character imaginable.

The Late Domingo Mora

The refinement of his taste, his original conceptions and the interesting interpretations that he gave to the drawings of the architects for whom he worked, will make his loss keenly felt by the men of this Coast who have lately made his acquaintance and who have benefited so largely from his aid and counsels.

He was the type of the Spanish cavalier par excellence, full of fire and hospitality, with a sympathetic nature that endeared him to all with whom he came in contact.

Mr. Mora was born in Barcelona, Spain, September 8, 1840. He was a pupil of the academy of Barcelona and a fellow student and intimate friend of the famous Spanish painter, Fortuny. He went to South America at the age of twenty-three. Here he executed considerable important work for public buildings and private residences. One of his very well known figures here was called the Victim of the Civil War, for which he received a medal at the Exposition of Chili. At the present time, this is in the National Gallery of Monte Video.

He afterward returned to Europe for a short stay of two years and in 1880 came to New York, where for some time he was associated with the Perth Amboy Terra Cotta Company, executing for them many important works in terra cotta, this medium being at that time entirely new in this country.

The panels in the Metropolitan Opera House and the panels of the Produce Exchange were among the first works he did in New York.

He was one of the first members of the National Sculptors Society.

If we measure the man by his works, how full and interesting must his life have been to have given us this long and important list of successes.

The sixteen statues or caryatides in the vestibule of the Court House at Boston, executed in stone.

The reredos, tower and bas reliefs for Emanuel Church in Boston.

Moral and religious allegorical subjects from the old and new Testaments.

Statues of the Apostles, etc., for the church in Fairhaven, donated by Mr. Rogers.

Statue of Aristotle, the Greek philosopher, for several years exhibited in the department of modern sculpture in the Art Museum of Boston, now the property of the new museum at Santiago, Cuba.

Medallions on exterior of the Boston Public library.

Figure decorations on the exterior of the Fremont temple, Boston, Mass.

The majority of the panels decorating the frieze and portico of Trinity Church, Boston, Mass.

Panel over the entrance door to Grace Church, New York.

Pediment for the Criminal Court House, New York.

Panels for the Metropolitan Opera House, New York.

Seals for the Produce Exchange.

Allegorical frieze for the Masonic Temple, Trenton, N. J.

Sketch for the frieze decorating the arch at Stanford University, since ruined by the earthquake of 1906.

The seven foot bronze statue of Christ in the Santa Clara cemetery; O'Connor memorial.

Mr. Mora was married in Monte Video in 1873 to Laura Gaillard. Two children, F. L. Mora and J. J. Mora, were born to them, and in these two sons the spark of art has been transplanted in a goodly measure. F. Luis is a painter of note in New York and a recent appointee as academician. To him is due the credit for the very successful ceiling panels in the Los Angeles Orpheum. Joseph Mora is a sculptor and was associated with his father in the later work done on this coast. He will continue the atelier at Mountain View.

* * *

American Architecture

One might be tempted to believe, from some of our foreign critics, that the skyscraper is alone the "architectural type" that America proposes to hand down to posterity. Far indeed is such from the truth.

Whatever carping criticism may say of "the home of the free and the land of the brave," America is essentially the land of homes. Nowhere else, in all other lands put together, are there so many individual homes of comfort and beauty as here, and nowhere are the accessories of these homes so varied and universal.

The Englishman talks about his "bath" when he means a tin pan that might do for a bird's bath, a rag and piece of soap—and it is not Pear's soap, either. Few indeed are the conveniences of the ordinary English house. From kitchen to bathroom the American home is the one home from London to Japan that is the fully equipped and "ready to wear" for the man of moderate means as well as he of the immoderate.—Ohio Architect, Engineer and Builder.

San Francisco—the Phoenix City

By JAMES GORDON

One hears so much that is uncomplimentary about San Francisco these days that the following graphic story of the city's restoration, taken from "Building Progress," an Eastern publication devoted largely to fireproof construction, is a most refreshing contrast. What the writer says about the rebuilt California metropolis is largely the truth, and while most of us San Franciscans know all the facts contained in the article, there are many of our readers who live away from the city who will find the story replete with interesting facts.—Editor.

THE fabled phoenix, on a pyre of its own building, ignited by the fanning of its wings, wrought its own destruction. But from the ashes it came to life again with renewed vigor, and became to mortals a symbol of immortality.

San Francisco, for more than a hundred years, built for its own destruction, not, like the phoenix, purposely, but no less surely. From fear of earthquake the pioneers built always of wood, and low. Only in recent years did fire regulations crowd wooden buildings away from the very center of the city. Not until recent years did San Francisco risk a skyscraper.

In good time the earthquake came, and the damage of earthquake alone would have been repaired within a year. Broken chimneys, severed water mains and the wind that sweeps ever through the Golden Gate were as the fanning of the phoenix wings, and the city outstretched upon its hills like a great, gray, fog-stained bird blown in from the sea, was consumed by fire. Five hundred million dollars' worth of property lay in ashes.

The destruction and the resurrection of this phoenix city is no myth. It is a miracle. For a year or more the city lay prostrate, four square miles of it, void of form, a fire-gnawed skeleton. The spirit of the place, indomitable, immortal, struggled meanwhile against such mortal odds as no man can conceive without the experience of it. Then all suddenly this spirit, with an impulse superhuman, took form and shape, of a semblance to the city dead upon its pyre, but so much statelier and more proud that the wonder of the transformation passes comprehension.

It is not yet six years since that fateful April day, and more than three hundred million dollars have been spent in the rehabilitation of San Francisco, and more wisely, perhaps, than like amount was ever spent before. Today the San Franciscan has no fear of earthquake, but he does fear fire. To provide against the possibility of another such holocaust the authorities have established a triple fire-fighting service. In addition to the usual system of fire plugs connecting with the mains, huge reservoirs holding from five hundred thousand to a million gallons of water are sunk below the streets at intervals throughout the business section. These reservoirs are kept full as a safeguard against broken mains. Then all buildings over five stories high are compelled to have a five-thousand-gallon tank upon the roof, with fire connections and hose throughout the building. Under contemplation for the immediate future is a fire-fighting system with water pumped from the sea and distributed underground throughout the city.

All this is well and good. But the city's best fire protection is in the improved standard of buildings. The fallacy of fearing height was proved by the way in which many of the highest buildings came through both

earthquake and fire. Being modern and better built their frames stood while lower buildings of poorer construction crumbled around them, and they needed repairing but not rebuilding.

The general plan of the new city shows little change. With practically the entire business section swept clear it seemed a time for working out some definite city plan. But while it was the best time San Francisco will know it was also the worst. Men suffering from the loss of ten thousand, a hundred thousand, a million dollars—their all; men who ranked yesterday as princes of finance, standing today in a bread line to receive the bounty of benevolent sympathizers, must be more than business men to choose such a time for the consideration of a city beautiful. What they wanted was a city profitable. They wanted to get buildings up, anywhere, anyhow, that rents might begin to come in, and business be resumed. There was an effort to carry the business center away from that great hub from which Kearny and Market and Geary and Montgomery and Third streets radiate, out to Van Ness avenue, where the flames were stopped by dynamiting marble and granite palaces. It was as futile as trying to make the earth twirl from east to west. It was tampering with a natural law. In the years of its growth the business of the city had sought the natural centers, where a street north and south of Market ran together into that great artery—at Third and Sixth, and on at ever-widening intervals toward the west.

The great vortex at Third and Market streets was irresistible, and the first permanent structures were rebuilt in this vicinity. One by one towering skyscrapers reared their heads in air until, on a recent holiday, the crowds in Union Square celebrating the admission of California as a State could look about in vain for trace of the dire days of April, 1906.

But while the occasional visitor notes few changes of location, finding well-known landmarks in their places—the Palace Hotel, more noble now in its outward seeming, suggesting a Florentine palazzo, and with the interior charm of a larger and more beautiful court; the Ferry tower, the hands of whose clock stopped at the moment of the first earthquake shock and did not move again for many a day; the Call building, flaunting as before head and shoulders above its neighbors; the Flood building, standing firm as Plymouth Rock, and with the Emporium building serving to illustrate what can be done by architectural boldness toward creating an artificial business center when the natural center by reason of the conjunction of two streets at Market is a block farther west—while these and other landmarks emphasize to the occasional visitor the likeness of the new city to the old, the familiar can point out marked changes.

Into the wide channel of Market street the banks have surged. There is one at nearly every corner, and straightway one remarks the fact that most of the new bank buildings are used exclusively by the banks. The idea is borrowed from London and the European capitals, and has been adopted in New York and Chicago. Banks have learned that the public likes visible assets. Nothing is more impressive than a bank that can have a home of its own and not be merely the ground-floor front of an office building. As a matter of facts and figures, except in the choicest locations, where rents are highest, government bonds pay as good interest as skyscrapers, and the advertisement of an exclusive building is a premium. One or two insurance companies have followed the example of the banks, and several of the buildings already completed show very fine examples of a pure, classic style.

Hardly less conspicuous is the graceful, cloud-sweeping tower of the Humboldt Savings bank, which is a monument to the cleverness of one of

a group of young California architects who have put a distinctive mark on the new city. The bank was considering rebuilding on its old site in Geary street, when two of the officers met at lunch with their architect. They argued for their old location, he for a new one in Market street. It was conceded by the bankers that a bank should be where most people can see it. "Well, then," said the architect, "let us go out and count the people on Market and Geary streets."

It was agreed, and two men went into Market, one on each side, while the third went to Geary. This was before all the business had come back from Van Ness avenue, but even so the men on Market found in a moment they might as well try to count by drops the water in a flowing stream as to count by individuals this human tide, while over on Geary street the one man, single-handed, had time to spare while counting the people on both sides of the street.

A few days later the bankers bought a site on Market street. There were no corners to be had, so they took an inside lot, and then it was up to the architect to do the spectacular thing to make the change in location pay. The result was a tower that challenges the supremacy of the Call building, with enough floors at the back to offset the great cost of such a high tower on such a limited area. The income from rentals may not be more than the interest on government bonds, but the bankers are satisfied that a building which attracts the eye for miles in every direction has an even chance with the beautiful classic structures that look like shrouded mounds of ready money.

It is impossible and unnecessary to make separate mention of all the notable office buildings. While there has been no concerted effort on the part of architects toward the working out of a city plan, each man who has a love of the place in his heart has tried individually to do the worthy thing. With such an opportunity as that presented by the rehabilitation of an entire city, architects came in droves to San Francisco after the fire—from the Middle West, from the East, from Europe. Some of these have made a distinct impress upon the new city, notably the architect of the Palace Hotel and the Merchants' Exchange building. But for the most part the work of reconstruction has been done by San Francisco men. Before the fire a coterie of the younger architects had been pulling strongly against an adverse tide in an effort to do what art demands of them, with only a degree of success. For in naked truth it must be admitted that men who go to hunt gold and settle new countries are not always men of refined and cultured taste, and the finding of gold, under the ground or on top of it, does not work the magic of changing taste. Whatever else of fine spirit and hospitality, of grit and good fellowship, and what not, of desirable parts may have mingled in the make-up of the men that made San Francisco, artistic sense was often lacking. In the old days architects must do their bidding, and the result was a city that had but few redeeming architectural features. Latterly that second generation which profits by the success of the preceding one had listened somewhat to the advice of architects of the newer school, and the buildings that withstood best the severe test of earthquake and fire were largely to their credit. In the rebuilding of their city the influence of these young Western architects is still more strongly felt.

A conspicuous example of a distinctively Western treatment of architectural ornamentation is found in the Alaska Commercial building. The owners of the building have made their fortune in Alaska products, and in

these the architects found motifs for ornamentation to replace those conventional motifs that seem to have been accepted for all time. Seals and polar bears, walrus heads and tusks, dolphins and fishes, nets and cables, icicles and sea shells have been introduced in a manner so delicate and artistic as to preserve this very personal suggestion from any vulgarity whatever. The building is not only an artistic triumph for the architects, but has the practical merit of being absolutely fireproof and self-supporting. There are fireproof vaults on every floor, and in every office hot and cold water and filtered drinking water. It has its own electric light plant, compressed air cleaning plant, and a 30,000-gallon storage tank supplied with water pumped from its own well, and a set of fire pumps so arranged that 700 gallons a minute could be thrown into the fire hose stretched throughout the fourteen stories of the building. It is the belief of the builders that if cut off by fire from every other building and facility in San Francisco, this structure could offer its patrons every safety and convenience.

A very distinctive bit of architecture is the Columbia Theatre. In it the architects have declared a belief that a playhouse should announce its purpose, and by the use of color in no mean measure have denounced the architectural severity imposed upon us by our Puritan forbears. We are no longer Puritans. We have a right to beauty of form and color, particularly in California, where these things are a truer expression of the temperament of the people. In the office of the same architects is the completed and accepted design for a Masonic temple. It is strongly suggestive of the Palazzo Vecchio, in Florence, except that it is to be built in white marble, and promises to be very handsome—handsome enough for all time. This is in accordance with the faith of these men that within ten years San Francisco will begin to build for the future, that much that has been done hastily in the scramble to get on their feet again will be replaced by something more worthy.

Little has as yet been done in the way of public buildings. In the stress of reconstruction these were things that could best wait. The Hall of Justice is nearing completion, and if it is an earnest of what will be done by the municipality the future is safe.

Particular attention is being paid to the erection of public schools. There are about forty new buildings under way, of varying design, but all combining utility with dignity and beauty as an expression of the new purpose of the builders of San Francisco.

Perhaps in no quarter was the opportunity for betterment seized more eagerly than in Chinatown. The old Chinatown was a rookery that defied all diagram and description. The smoke-stained, odorous cliff dwellings, reeking of murder and mystery, were razed to the ground. From their ashes have sprung quite modern tenements, which are already receiving their baptism of blood and their seasoning of smoke and red posters. On the principal streets the shops that cater to tourists are at once bazaar and bizarre. They are not, perhaps, Chinese, but certainly Chinesque, and ought to satisfy the tourist longing for the exotic. One might wish that they had copied some quaint old Chinese street, like Nanking Road in Shanghai, a charming and picturesque thoroughfare, but one can at least be grateful for the Oriental color and the pagoda effects grafted on the very American groundwork.

To continue in admiring wonder of the new San Francisco, one must not wander too far beyond the business section. As soon as fire limits were established there rushed into existence just outside whole blocks of cheap and ugly apartment houses.

It would take something more than a cataclysm to correct the taste of a whole cityful, and unfortunately the person who lacks taste is the last person in the world to find it out.

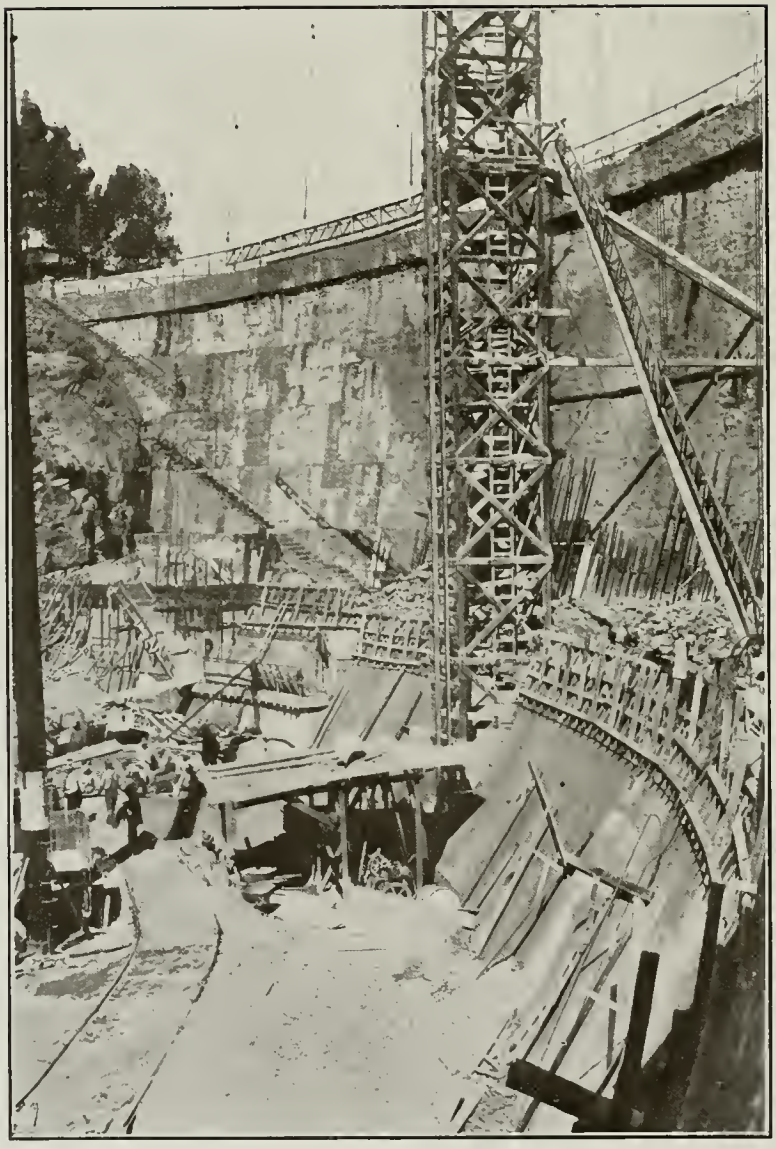
However, five years are but an inch of time, and much that has been done as a matter of expediency will, as before suggested, be replaced by better things as time goes on. And as one turns from the horrors of gimcrack and gingerbread on the tawdry tenements under the lee of Knob Hill, his eye falls upon a spectacle which rivals all the marvels of fairy lore—the Phoenix City soaring to the clouds, with a vigor and splendor of which even the lovers of San Francisco scarce dared to dream five years ago.

* * *

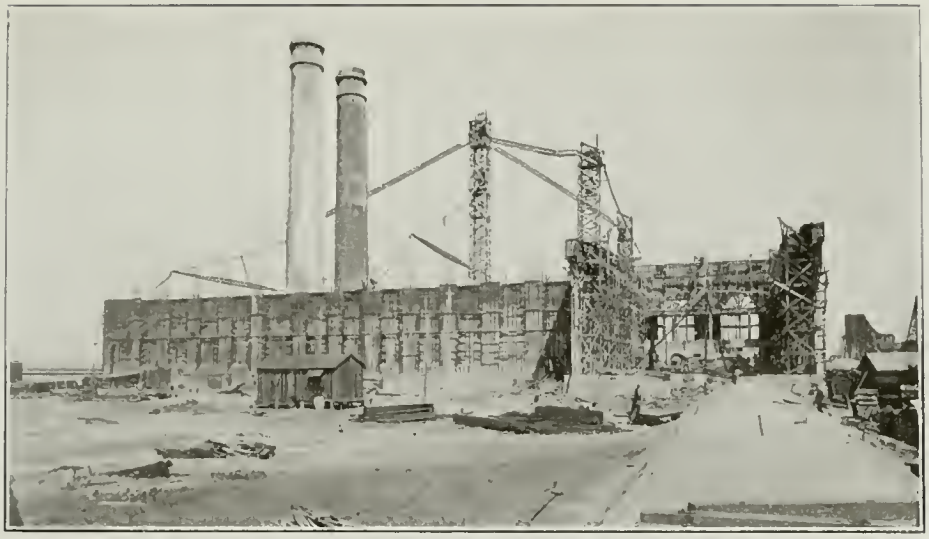
The Refining Influence of Art

THE one thing that stamps the enlightenment of a century is its art. Battles are lost and won, aqueducts constructed, and canals built, but the intelligence of the epoch in which the work was accomplished is decided by, perhaps, a little tracery upon the battle instrument, or the proportion, arches, or, perhaps, the capital of some column in the engineering feat. Napoleon Bonaparte has been dead less than ninety years, and what lives today of his master brain and energy? Is it not principally the good roads he built, and the works of art he acquired for France? Why is Washington the most beautiful city in this country? Not on account of its natural advantages, but on account of its artistic plan, a city of monumental centers. Unfortunately, the beautiful early architecture of the city has deteriorated. Public buildings should be an educator as well as public schools. You may talk about fine things to the child, but unless one is brought up in touch with them the nature of the individual is seldom influenced. A person need not be rich in Europe to be surrounded by beautiful things, they are everywhere, the State owns thousands of superb paintings and statuary and the public works have been constructed by artists for centuries. It is said we have had too much to do in developing the natural resources of our great country to pay attention to art. Is this so? Was not our art of the colonial epoch a classic and does it not make people with refinement in their souls wish they had lived at that time? In most of the cities of Europe there are certain restrictions on all buildings, for example: On certain streets, the first stories must be of the same height; this gives a uniformity to the street, but as the height of the buildings is not necessarily the same, there is no monotony. This principle was carried out by the architects of the Chicago World's Fair. Will not the future generations liken the statesmen in power to the art, architecture, and engineering constructed during their lives? There should be a minister of fine arts. In a great country like ours, where millions go into public buildings, this man should not be merely a bureau chief, but a man of artistic and executive ability.

All public architecture, painting or sculpture should be referred to the secretary of fine arts, where an efficient staff could pass on same. Every year there should be a fine arts exhibition in Washington where the best works could be bought by government for the adornment of public buildings in Washington and the other cities. Young Americans abroad today are doing some of the finest work, but when they return to this country the bottom drops out, they feel at once there is no national artistic pride. An artist is delighted to sell his Salon picture to the French government for a nominal value for the reputation it gives him; and in this way the government every year makes excellent investments, and at the same time encourages and fosters art.—Clyde du Vernet Hunt, Major U. S. Army.



Progress work on the reconstruction of the Sweetwater Dam, near San Diego. Arthur S. Brent, contractor, J. D. Schuyler, engineer. This tower rises 210 feet high and distributes concrete 500 feet from each side by means of a suspended trough on cable way [Page 72]



Progress Work on the Edison Plant, Redondo
Contractor, F. O. Engstrom Company

Distribution of Concrete by Gravity

By H. W. BRYSON, President of the Concrete Appliances Company

THE wide-spread recognition of the perfected system of the Concrete Appliance Company's "G-Y" system of conveying and distributing concrete is here briefly stated, and embodies for the first time all the latest engineering data and practice relative to the art, giving the formulae, cost data, instructions for operation, different angles at which it is practical to operate, etc. It also contains information relative to the limits of booms, towers and cable ways. The data herein contained is the result of actual experience and will prove exceedingly interesting to architects, and of inestimable value to engineers and contractors.

The "G-Y," or gravity, system of conveying and distributing concrete originated in Southern California, spread gradually up the Pacific Coast, and then East.

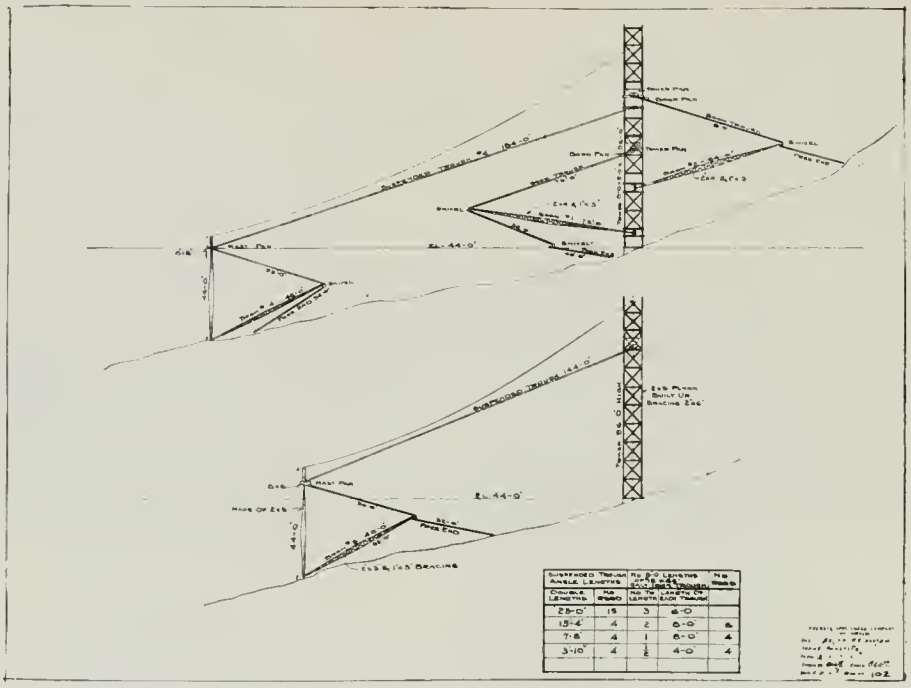
The patents of the appliances of this system are owned by the Concrete Appliances Company of Los Angeles; are practically basic, and are covered by the following letters patent: No. 948,719, No. 948,723, No. 948,746.

These are the first recorded patents of the art, and cover in general the use of a revolving mast or boom, supporting a trough or pipe, with swivel and movable trough at end of boom, the combination of which gives a horizontal motion in any desired plane at the delivery end of pipe or trough.

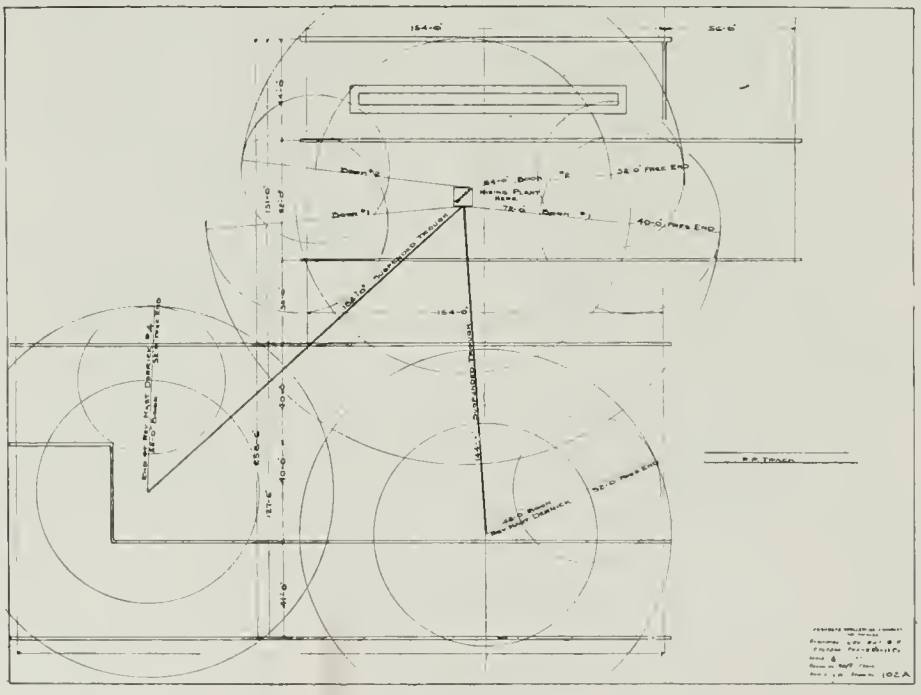
There are numerous other patents pending, all more or less interfering with the above letters patent. They are combination patents, having little value without the use of the above basic patents.

Following is a partial list of the prominent licenses of the "G-Y" system, the jobs on which the system has been used and the yardage of same:

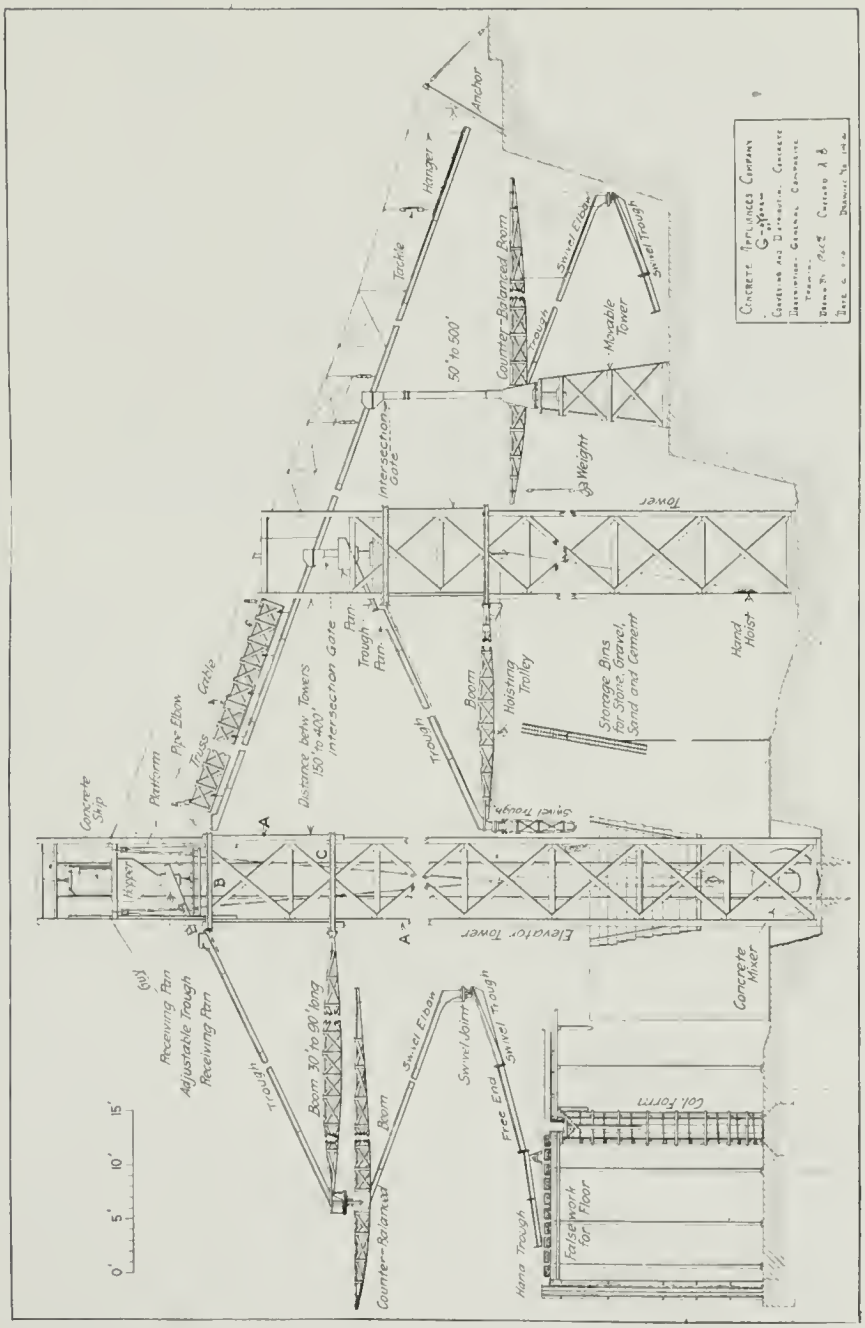
Washington Water Power Company, Spokane, Wash.....	100,000 yards
Hansen Malting Company, Milwaukee, Wis.....	17,000 "



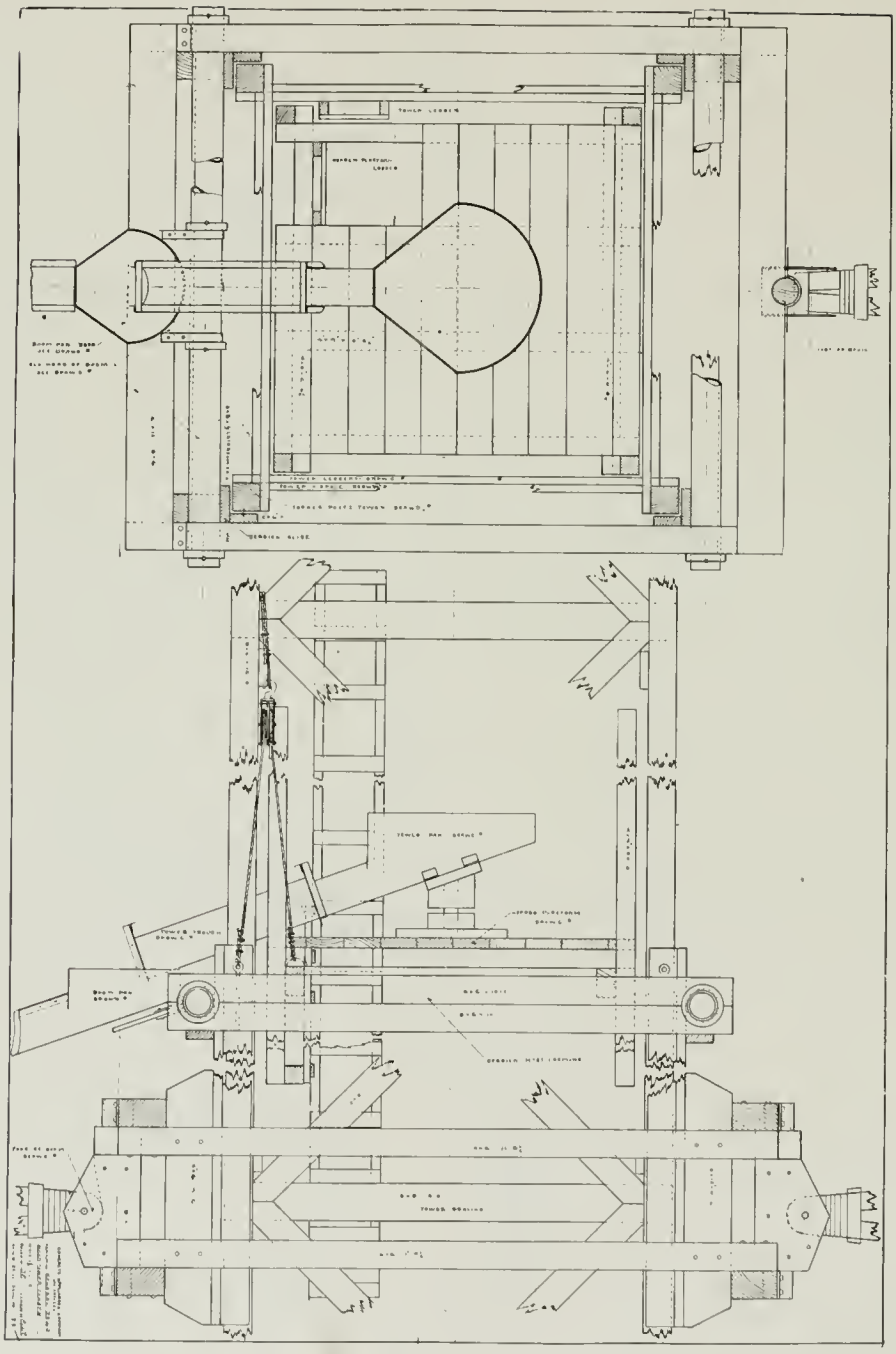
Illustrating Layout of the G-Y System for Foundations of a Large Mining Plant at Tonopah, Nevada



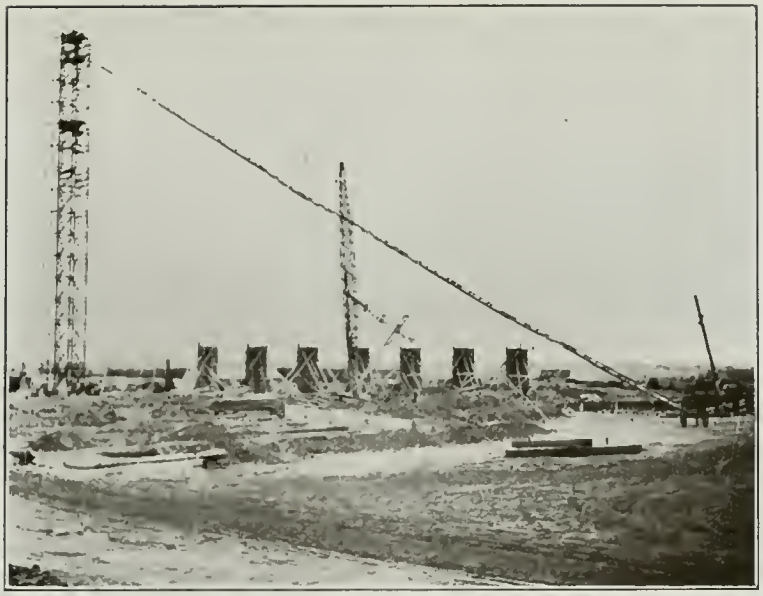
Another Tracing of the Above Layout
Young Construction Company, Engineers and Contractors



Composite Drawing of the G-Y System, Illustrating in General the Different Methods of Application



General Drawing of Wood Tower, Showing Outside Sleeve for Boom and Sliding Platform on Inside of Tower

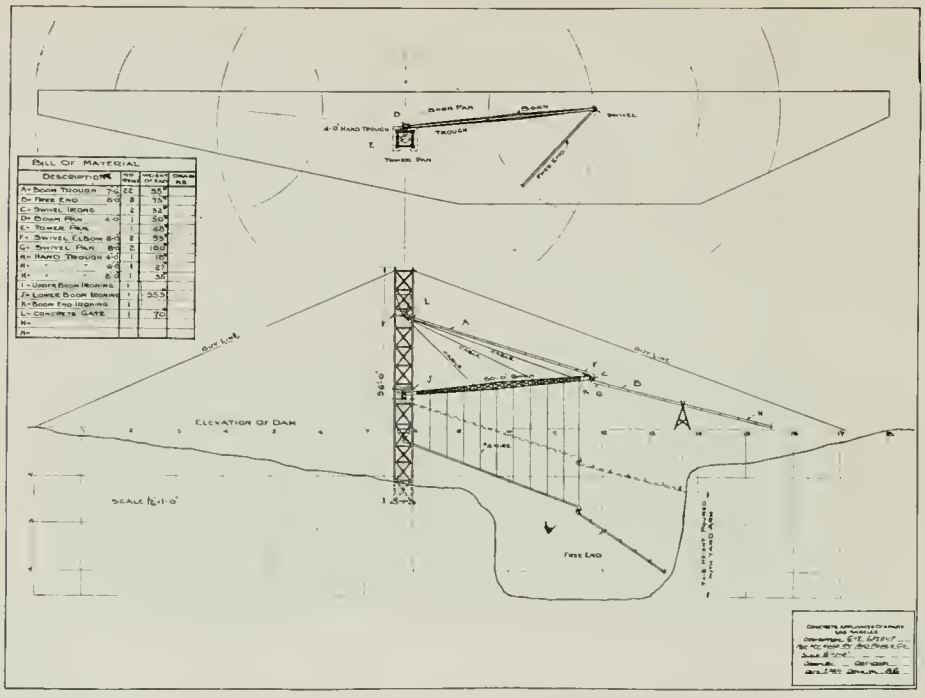


Installation for Santa Fe Railway at Sweetwater, Texas

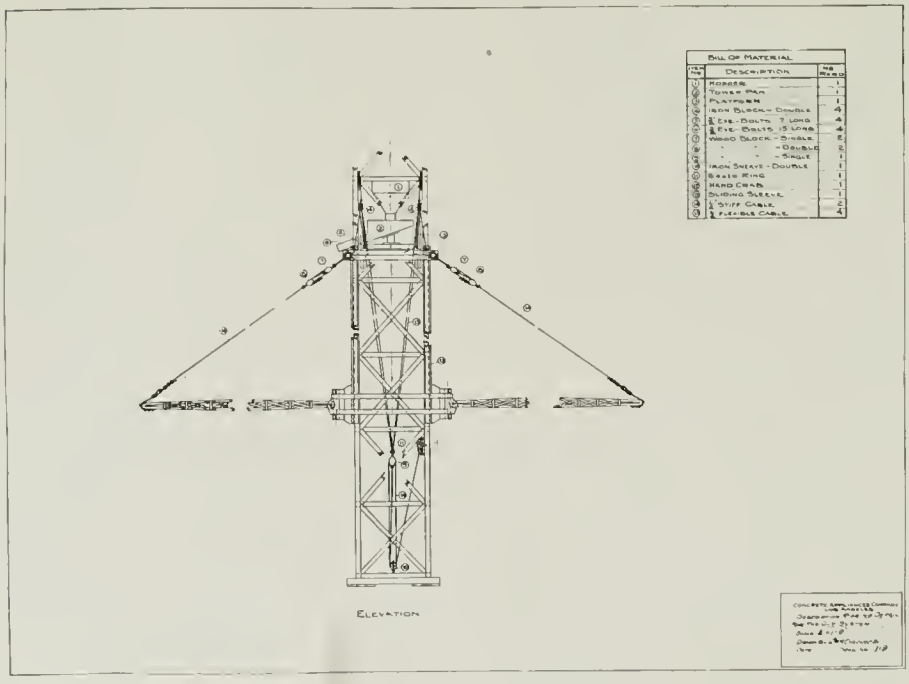
Standard Oil Warehouse, Chicago, Ill	3,500	yards
Pacific Fruit Express Company, Las Vegas, Cal	3,000	"
Gottfried Brewing Co., Chicago, Ill	4,900	"
Sweetwater Water Co., Sweetwater Dam, Cal	20,000	"
A. T. & S. F. Ry. Co., San Bernardino, Cal	5,800	"
Dept. of Engineering, State of California, San Jose	8,000	"
Spreckels' Theater and Office Building, San Diego, Cal	6,000	"
First Church of Christ, Scientist, Pasadena, Cal	4,000	"
State Hospital, Agnew, Cal	4,000	"
Union League Building, Los Angeles, Cal	5,500	"
Timken Inv. Co., San Diego, Cal	5,000	"
Marston Building, San Diego, Cal	4,000	"
Columbia Hospital, Los Angeles, Cal	3,000	"
Ferguson Company, Los Angeles, Cal	3,000	"
B. P. O. Elks, Los Angeles, Cal	2,000	"
Hamburger R. & T. Co., Los Angeles, Cal	3,000	"
Los Angeles Exposition Building, Los Angeles, Cal	2,000	"
Rampart Apartments, Los Angeles, Cal	3,000	"

The outcome of an investigation by the Washington Water Power Company's engineers of the "G-Y" system operating on the reconstruction of the famous Sweetwater Dam, near San Diego, was the signing of the above 100,000 yard job, on the Spokane river. This will be the largest overflow dam in the world, being 200 feet high and 400 feet wide. It is also to be noted that the system is being used by the Ferrolite Company of San Francisco, on government work at Fort Mason.

For the successful operation of a gravity system, one of the essential things is the proper mixing of the ingredients. Having given the proper proportion of the ingredients, it is absolutely necessary that enough water should be added to the conglomerate to produce a specific gravity such that the rock is held in suspension. The mixture should flow like a thick

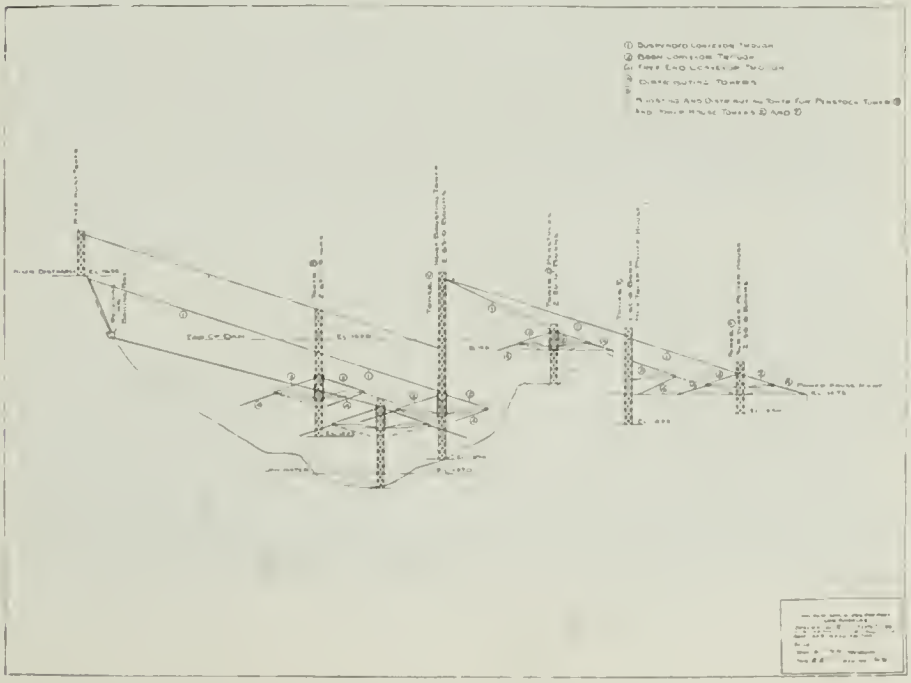


Layout for the Mount Hood Railway and Power Company's Plant, Portland, Oregon

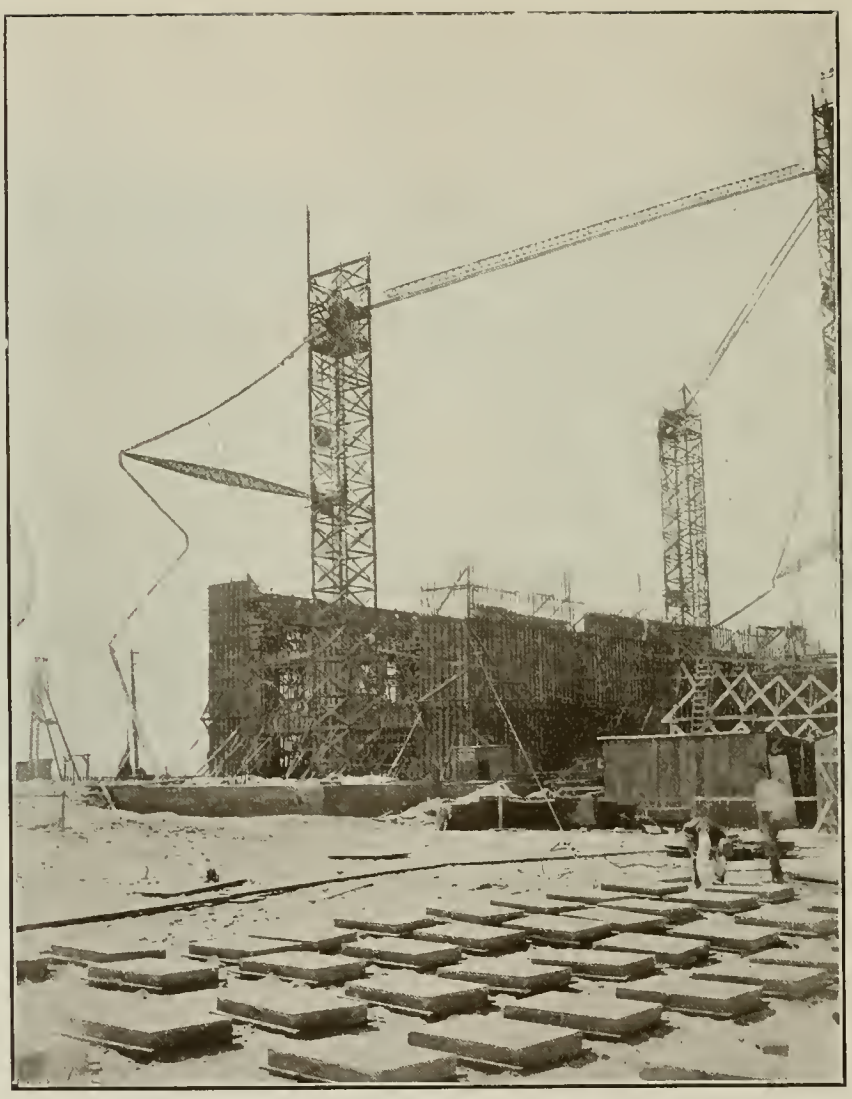


Rigging Detail for the G-Y System

Site of Washington Water Power Dam now Under Construction at Long Lake, Washington. Will be the Largest Overflow Dam in the World, being 200 Feet High and will Back Up Water 23 Miles



G-V System Layout for the use of the Washington Waterpower Company's Dam at Spokane, Washington

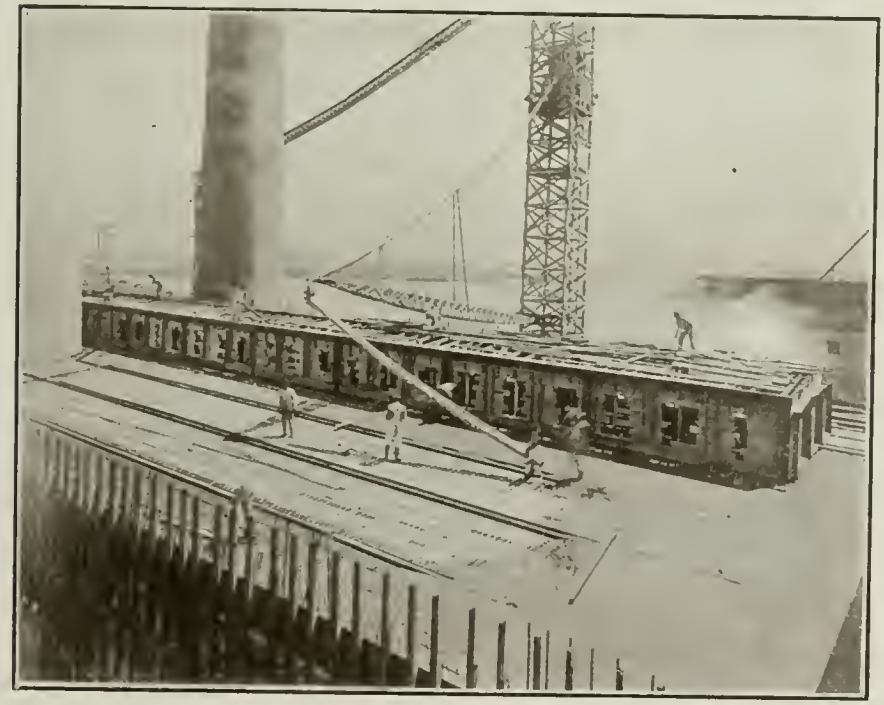


Illustrating Spiral Method of Coming Down from a Great Height to the Ground, thus Avoiding a Vertical Drop of Concrete, Edison Job, Long Beach, California

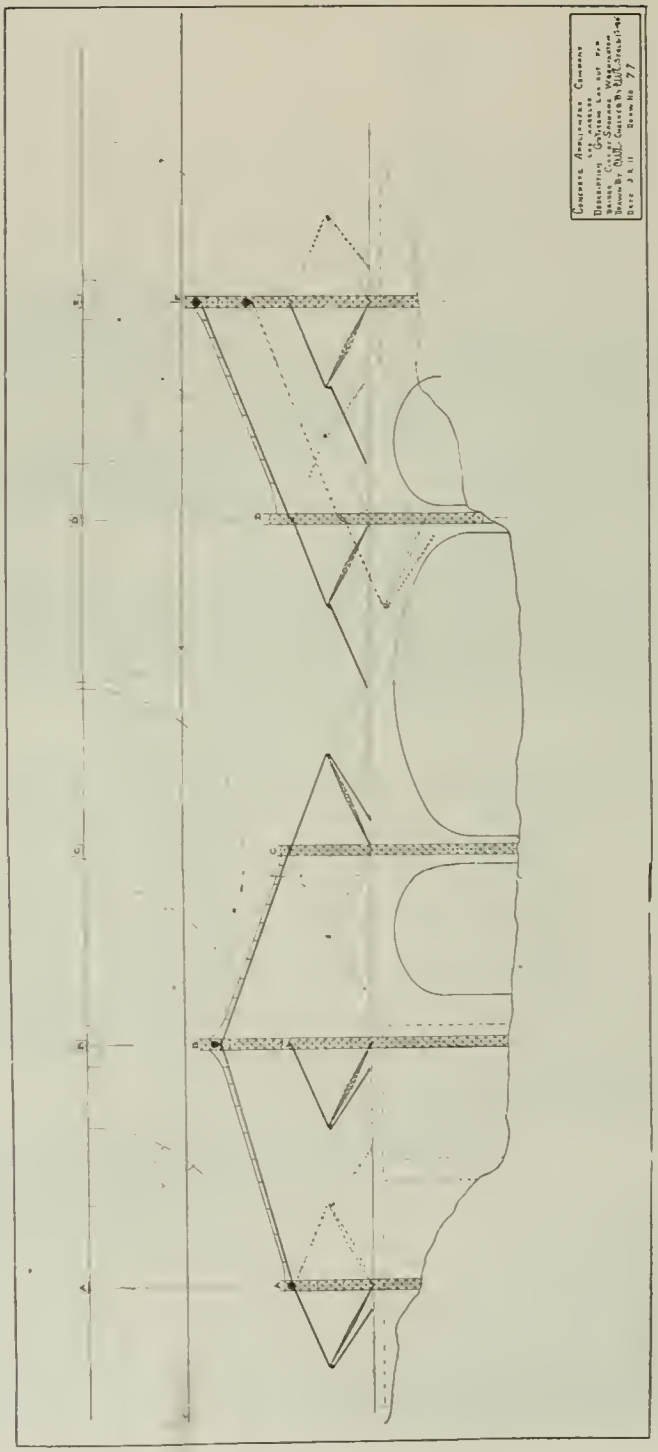
gravy with no sign of excess water. In other words, the mixture should have a saturated amount of water and no more. This particular mixture is surprisingly slippery, having an oily nature, and flows readily around steel. The discovery of this particular nature or consistency was the cause of revolutionizing the existing methods of distributing concrete and led to the development of the "G-Y" system..

Another great advantage in the conveying and distributing of concrete by the gravity system is that large quantities can be handled by a small stream, placed where wanted, practically obviating all air pocketing with absolutely no separation and overcoming all tendency to La Tense.

Construction Work on the Barlow Building, Los Angeles

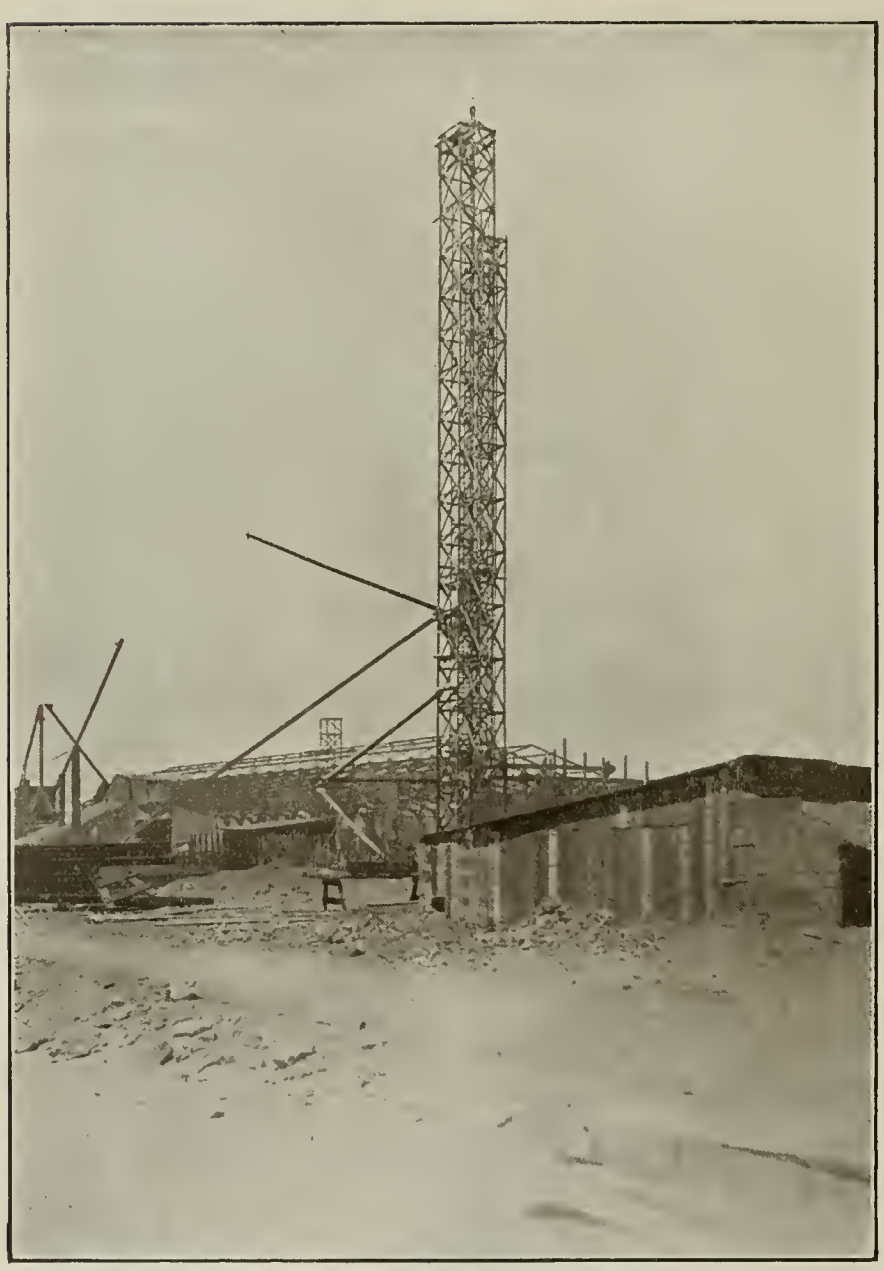


Laying Out the Roof of the Edison Job at Long Beach



Suggestive Layout in Using the G-Y System in Bridge Construction

Construction of the Edison Electric Company Plant, Long Beach, California
View Taken from Top of Knife Bridge When Span Was Up



Showing Government Warehouse Under Construction at Fort Mason, Using Gravity "G-Y" System, Ferrolite Company, Contractors

On account of the concrete flowing in a small and continuous stream, this system is especially adapted to the pouring of thin walls and columns in which there is a large amount of steel, assuring in every case practical, monolithic construction.

The operations of the system are as follows:

First. The mixing of the ingredients, stone, sand and cement, in any suitable batch mixer.

Second. Hoisting by skip of the mixed concrete to an elevated hopper.

Three. Transferring of concrete through pipes leading from this hopper to the point where it is desired to be poured.

Four. The extreme simplicity of design and construction.

Five. The surprising flexibility of the system.

A few of the great points of superiority of this system over the wheelbarrow or cart method of distribution are as follows:

First. The obtaining of the initial set of the concrete when and where wanted.

Second. A uniform, homogeneous, plastic mixture, and the absolute overcoming of all tendency to La Tense.

Third. The unlimited variation of the design of buildings to which it is adapted.

Fourth. The use at all times of a standard equipment for the entire process of mixing, transferring and pouring.

Fifth. The saving of breakage of hollow tile, and displacement of steel on floor work, also the saving of concrete from spilling and the cost of cleaning the floors and beams afterward, which is unavoidable when using the cart or wheelbarrow method.

Sixth. The assurance of deep, narrow walls being perfectly filled.

Seventh. The handling of large quantities, the output being limited only by the mixing and hoisting capacity of the plant.

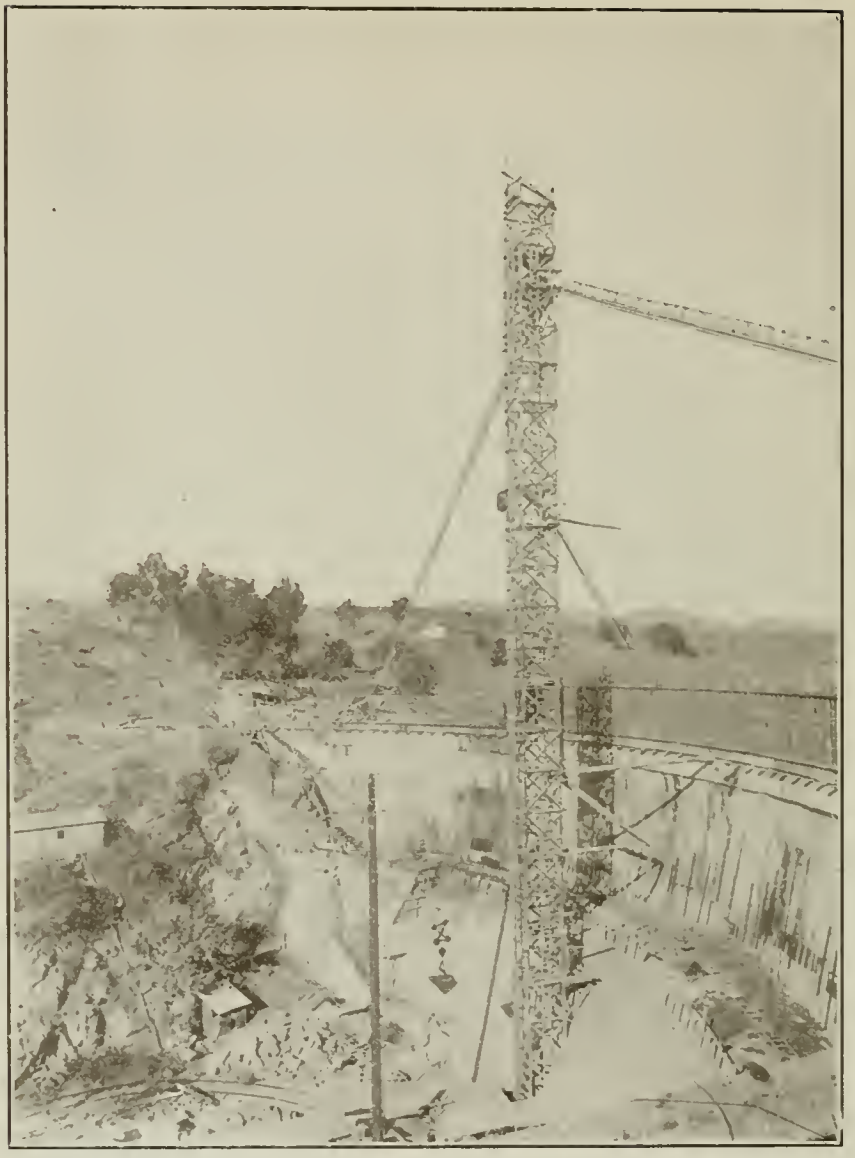
With the wheelbarrow, cart, car or bucket method, the dumping of a large mass is apt to bridge over, or to wash itself when dumping, producing pockets. It is also liable to foam which gives to La Tense.

Having demonstrated the above advantages of the "G-Y" system, it became necessary to evolve a general line of appliances, mechanically constructed, easily rigged, and absolutely "fool-proof," which would handle concrete economically.

Considerable experience and large amounts of money have been spent to determine the maximum and minimum angles of flow, the maximum and minimum reach of booms and free ends, the comparative relative value of different shaped trough, and the advantages of the trough over the closed pipe.

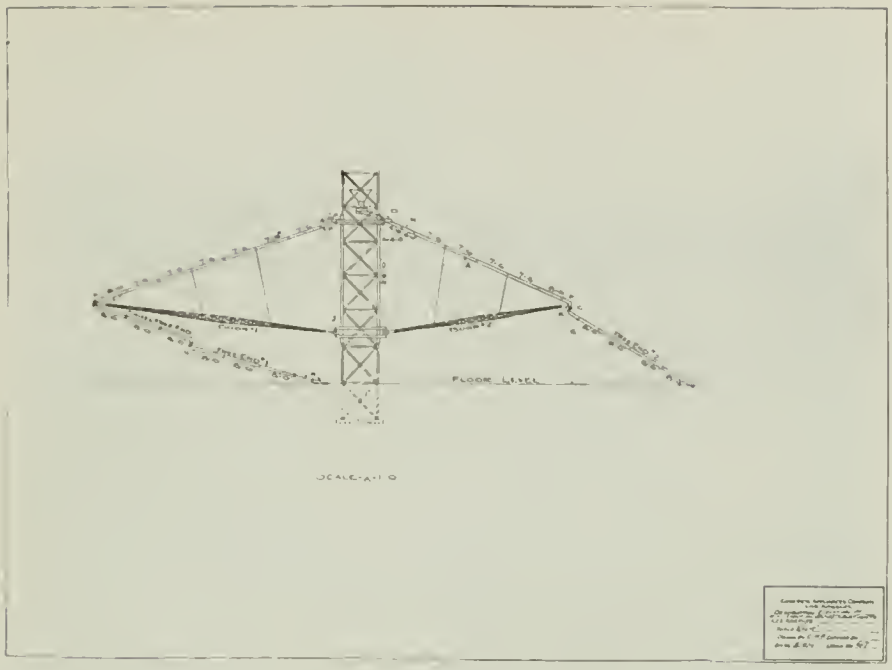
Concrete has been run successfully by the "G-Y" system from 7 degrees to 45 degrees, dropped vertically 120 feet into a hopper and re-distributed. The best angle and the one now used by engineers is that of 18 degrees with the horizontal.

The rate of flow of concrete was determined for practical reasons by Messrs. Uhden and Turner, engineers of the Washington Water Power Company, Spokane, Wash., and it was found that through a round opening of 7-inch emptying into an 8-inch trough, at an inclination of 18 degrees with

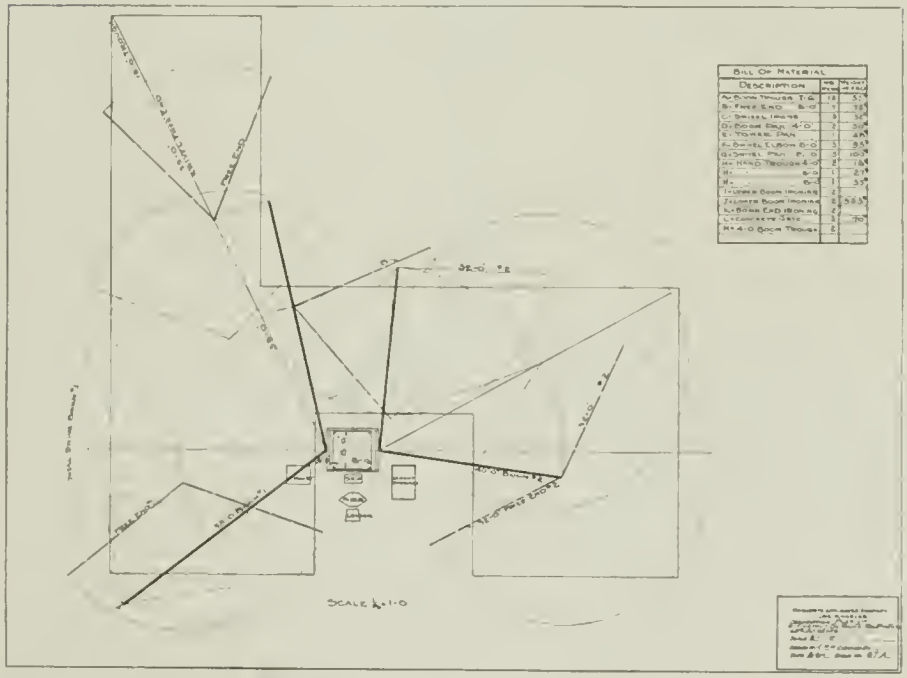


Another View of Tower and Cable Used in Reconstruction of Great Sweetwater Dam

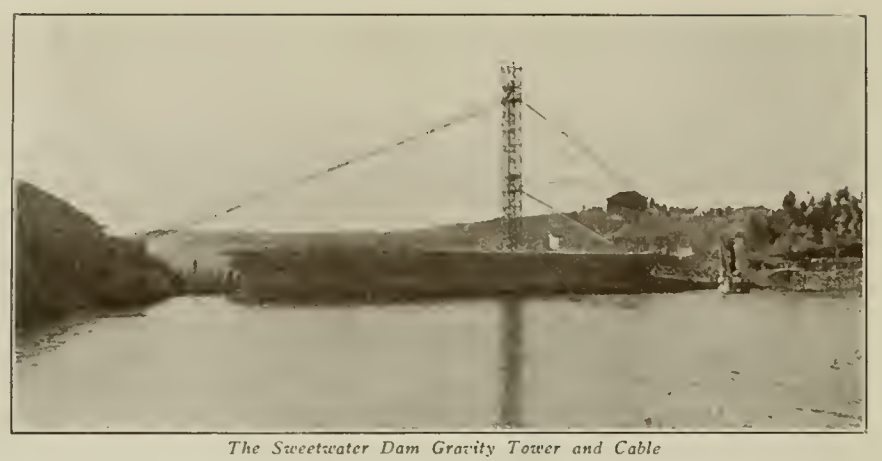
the horizontal, mixed concrete of the above consistency ran at the rate of 132 cubic yards per hour. Different shapes of chutes have been experimented with, from the flat wide trough, to the "V" shaped trough, the "U" shaped trough and pipe from 4 inches to 10 inches in diameter. The outcome has been that a 7-inch opening is large enough for all capacity. The latest and really the only "fool proof" equipment is that of 8-inch trough having open trough swivels and open trough free end. The system cannot be clogged and the flow can be observed by the tower operator at all times.



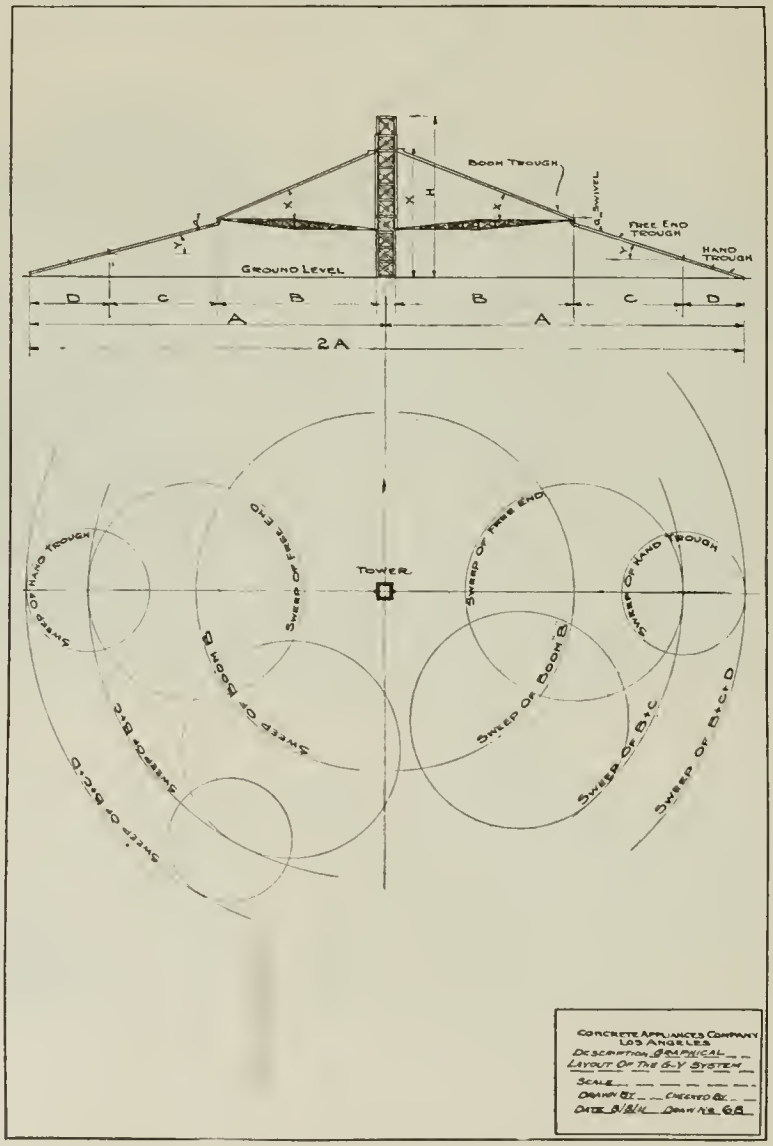
Elevation of the G-Y Layout for the Young Apartments, Los Angeles



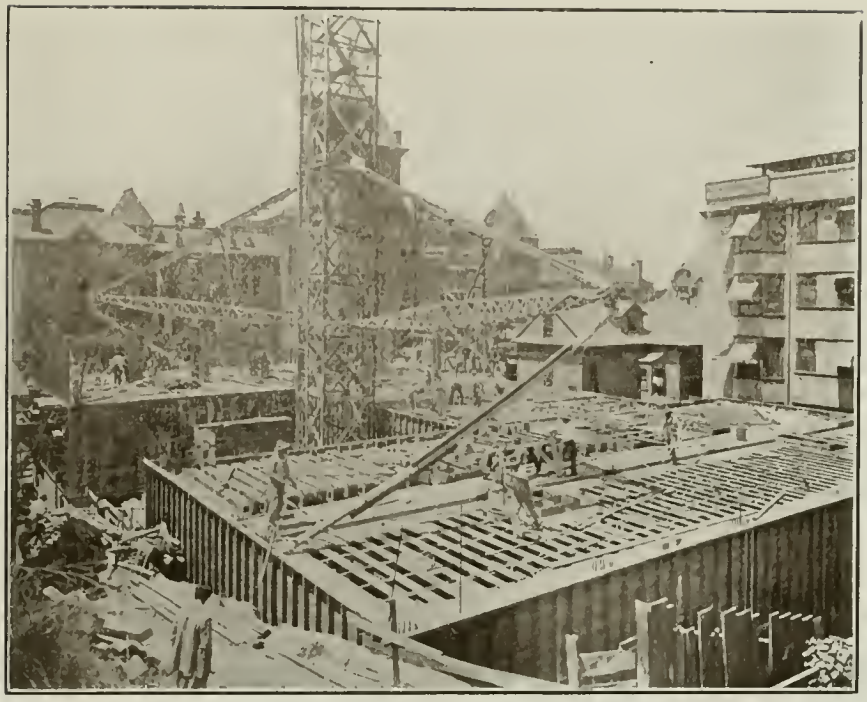
Elevation of the G-Y Layout for the Young Apartments, Los Angeles



The Sweetwater Dam Gravity Tower and Cable



Graphical Layout "G-Y" System, According to Formulas on Page 76



Gerald Apartments, Los Angeles, Fred E. Engstrom, Owner, Showing Double System at Work

From this experience the following data has been deducted and formulated for the use of engineers in laying out the "G-Y" system:

A	2A	B+C	B	C	D	a	x	H
60	120	60	30	30	..	4	24	44
70	140	70	40	30	..	4	27	47
80	160	70	40	30	10	4	30	50
90	180	80	50	30	10	4	33	53
100	200	90	60	30	10	4	38	58
110	220	100	70	30	10	4	39	59
115	230	115	75	40	10	4	41	61
125	250	110	80	30	10	4	45	65
140	280	130	90	40	10	4	50	70
160	320	140	100	40	20	4	56	76

A short method of determining the necessary height of tower to deliver concrete for any known distance: Multiply the total distance to which the concrete is to be delivered from the tower by the tangent of 20 degrees, plus the height of the concrete hopper. This will give the height of tower.

Referring to table of length of boom and free end, it will be noted that under the column marked "A" the distance of 160 feet is the maximum radius at which it is practical to handle from one tower. This gives, as noted under column "2A," a diameter of 320 feet, the boom in this case being 100 feet in length. A boom of this size has considerable inertia, and does not operate as readily as one of about 60 feet. When the distance to be reached is over 300 feet it is necessary to use a sub-tower and carry the concrete by means of a suspended trough. The limits of the cable suspension is about 400 feet. The pipe is usually carried by a wooden truss which is itself connected to a cable by block and tackle, as shown in drawing "14A."

A—Total length to be reached.
B—Boom reach. B=A—(O+C). B=½ A under 60 feet.
C—Free end reach.
D—Hand trough; 10 to 20 feet. a=4 feet.
a—Swivel.
x—Height of boom pan. x=C tan y+B tan x+a.
H—Total height of tower. H=x+20 feet.
All dimensions in feet.

Following are a few essential instructions for operating the "G-Y" system: (Contractors should copy this in their note books.)

First. Run about ten feet of water in skip.

Second. Charge mixer, using mostly sand with cement and plenty of water.

Third. Run up skip with water and drop at once, following up as quickly as possible with charge of concrete.

Fourth. Run mixture such that it has the consistency of a thick gravy, so that rock is seen held in suspension; if when dumped in skip, it stands up, it is too thick; again, if it levels off and shows one inch of water, it is too sloppy.

The specific gravity of the conglomerate should be such that the rocks are held in suspension.

Fifth. There should be a man in tower to operate the concrete gate on concrete hopper, to regulate the flow of concrete through pipe, and to time the discharge so that stream will be as continuous as possible.

Sixth. At a shut down of over twenty minutes, flush out pipe by sending up ten feet of water in skip. At the end of the day's run clean out mixer with two charges of water. Send same up through pipes.

Seventh. All pipe joints should be oiled with thick grease, which will prevent sticking.

The use of the system has demonstrated that economy is practical only when installation consists of booms, connected to tower by means of a sleeve as shown in Drawing "14A," and rotating about same. These booms supporting troughs, swivels and free ends.

It is also noted that this sleeve is raised and lowered by means of block and tackle, together with the hopper platform which slides on the inside of the tower as shown by detail drawing 99.

This combination allows one or two men at the delivery end of chute to cover all points within a horizontal plane, limited by the combined sweep of boom and free end. This installation further keeps all apparatus pertaining to the distribution of the concrete above the operating floor.

On account of the large capacity of the "G-Y" system, it has developed ingenuity on the part of the engineers and contractors in constructing storage bins and loading devices in order to increase output of the mixer.

The cost of operating varies from 18c to 38c per cubic yard: this includes a nominal royalty charge. The number of men necessary to operate the system are one man in tower and two men at free end of pipe. The number of men used to tamp are reduced one-half.

On dam construction one man is able to carry the end of the pipe around depositing the concrete among the boulders, or wherever it is needed, doing away entirely with tamping and the re-shoveling of the concrete. On the recent addition to the Sweetwater Dam, near San Diego, of which J. D. Schuyler is the engineer and Arthur S. Bent the contractor, the fact was developed that with the "G-Y" system it was much cheaper to put in concrete than place rock. In this case the contractor was only able to place about 15 per cent rock as against 85 per cent concrete.

The cost of equipment of the "G-Y" system for large jobs is one-quarter that of cable tramway, and on buildings the cost is offset by the cost of scaffold and runways necessary for operation of carts or wheelbarrows.

It has not been found advisable to use the "G-Y" system for the first time on any job less than 2,500 cubic yards. However, it has been successfully used on jobs as low as 300 cubic yards. In this case the apparatus was on hand and the men acquainted with the operation.

Upon receipt of plan and elevation of any job, the company furnishes layout and bill of material for equipment, etc., necessary for proper installation of the "G-Y" system, as well as the approximate cost of such apparatus as is new or novel in this construction. They also maintain a competent staff of riggers and operators, whose services may be obtained at any time for the installation and starting of the system.

In order to get this perfected system introduced, it was deemed expedient to place it on a license basis of 10 cents per cubic yard for the use of the system.

In conclusion, this system has developed features which are truly revolutionary, inasmuch as it furnishes better concrete at a less cost than has heretofore been accomplished.

* * *

Important Features of the New California Liability Law*

THE new liability act affecting contractors, owners and employes, passed at the last session of the California State Legistlature, became effective September 1st. In view of the great interest attached to this law, the following important features will be found of value:

SECTION 1 provides that in an action by an employee against his employer for damages resulting from personal injury upon the ground of want of ordinary care of the employer—(1) The fact that the employee has been guilty of contributory negligence shall not be a defense to the action, but may be shown to lessen the damages. (2) The fact that the employee expressly or impliedly assumed the risk of the employment shall not be a defense. (3) The fact that the injury was caused by the negligence of a fellow servant of the injured person shall not be a defense.

SECTION 2. No contract shall exempt the employer from the provisions above mentioned.

SECTION 3. The employer shall be liable for any personal injury accidentally sustained by an employee without regard to the negligence of the employer.

(1) Where the employer and employee are subject to the provisions of the Act.

(2) Where the employee is acting within the scope of his employment, and

(3) Where the injury is caused by accident either with or without negligence, and is not caused by wilful misconduct of the employee. Where the injury was caused by the gross or wilful negligence of the employer, or by the violation of the statute designed for the protection of employees, the employee shall have the option of availing himself of the Workmen's Compensation Provisions of the Act, or may maintain an action for damages irrespective of those provisions.

*Especially compiled by courtesy of the Fidelity and Deposit Company of Maryland, Pacific Coast Department.

SECTION 4 gives all employers the option of accepting the Workmen's Compensation Provisions of the Act, or being liable under the conditions mentioned in Section 1 above.

SECTION 5 provides the manner of making such election.

SECTION 6 defines the term "employee" to include every person in the employ of the State, county, city, town or school district, and every person regularly in the service of another, but does not include persons casually in the employment of another.

SECTION 7. All persons in public employment are subject to the Workmen's Compensation Provisions of the Act. All persons in private employment are subject to these provisions:

(1) Where the employer is subject to those provisions, and

(2) Where the employee does not give notice to his employer that he elects not to be governed by the Workmen's Compensation Provisions.

SECTION 8. Where liability for compensation under the act exists, the same shall be as provided in the following schedule:

(1) Medical and Surgical attendance and supplies required at the time of the injury, and for ninety days thereafter, not exceeding $100.00.

(2) If the accident causes disability, indemnity payable as wages on the 8th day after the accident and weekly thereafter, as follows:

(a) If the accident causes total disability, 65 per cent of the average weekly earnings of the injured person. If the injury requires the attendance of a nurse, the indemnity shall be increased 100 per cent of the average weekly earnings.

(b) If the accident causes partial disability, 65 per cent of the weekly loss of wages,

providing, however, that the aggregate liability under the sub-sections above shall not exceed three times the average annual earnings of the injured person. No indemnity is allowed for an injury which lasts less than a week, and the indemnity only begins after the first week. The aggregate disability shall not exceed fifteen years.

(3) Death of the injured person shall not affect any liability which accrued prior to the death, but after death the employer shall be liable for the following death benefits in lieu of any further disability benefits:

(a) If the deceased leaves a person or persons wholly dependent upon him for support, an amount equal to three times his average annual earnings, but not less than $1,000.00, nor more than $5,000.00, payable in weekly installments corresponding in amount to the weekly earnings of the employee, unless otherwise ordered by the Industrial Accident Board.

(b) In case the deceased leaves a person or persons partially dependent upon him for support, a part of the amount which would be payable to one wholly dependent upon him equal to the proportion of the annual wages which were devoted by the decreased to the support of such person or persons, the same to be payable in weekly installments unless otherwise ordered by the Industrial Accident Board.

(c) Where an accident causes permanent disability, either total or partial, and the injured person dies within fifteen years after the accident, liability for death benefits shall exist if the accident was the proximate cause of the death.

(d) Where there is no person dependent upon the deceased, the death benefit shall consist of the reasonable expense of burial, not exceeding $100.

Competitive Design for Crystal City of Australia

THE Minister of Home Affairs for the Commonwealth of Australia, Melbourne, has issued a memorandum in connection with the designs for the federal capital city, to be constructed in a federal district, which will be the permanent seat of government of the Commonwealth of Australia where all Commonwealth legislation will be conducted, and where the governor general will have his official residence.

A copy of invitation to the competitors, issued April 30, 1911, reports United States Consul John F. Jewell, from Melbourne, embodies the conditions of competition, historical and introductory matters relating to the district of Yass-Canberra and its selection as the federal district, and the requirements for the consideration of designers, the allocation of appropriate areas embracing sites for the following buildings, viz:

House of Parliament,
Residence of governor general,
Residence of the prime minister,
Public offices, as follows:
The department of the prime minister,
The department of external affairs,
The attorney general's department,
The department of home affairs,
The department of the treasury,
The department of trade and customs,
The department of defense,
The postmaster general's department,
Courts of justice,
Places of public worship,
Mint,
National art gallery and library,
State house,
Printing office,
Government factories,
University,
Technical college,
City hall,
General postoffice,
Museum,
Central railway station,
Railway marshaling yards,
Military barracks,
Criminal and police courts,
Gaol (jail),
Hospitals,
National theater,
Central power station,
Gas works,
Markets,
Stadium,
Parks and gardens, etc.

A description of the site selected is also given, and a model of the city site on a horizontal scale of 400 feet to one inch with a vertical scale of about 100 feet to one inch has been prepared, and a cast of the model will be sent to each of the centers of distribution for inspection. The invitation to competitors states that:

(1) The government of the Commonwealth of Australia invites designs for the laying out of its capital city, and undertakes to remunerate the authenticated author or authors of the designs that may be placed, respectively, first, second, and third, in order of merit at the final adjudication upon the designs, in accordance with the "Conditions of Competition," as follows: For the design placed first, premium £1750; for the design placed second, premium £750; for the design placed third, premium £500.

(2) The conditions under which designs are invited and will be received by the Commonwealth follow under the heading "Conditions of Competition."

(3) Information and particulars are also given, solely to assist intending competitors, under the respective headings: "Historical and Introductory," "Requirements," and "Description." The statements contained therein do not form part of the contract between the Commonwealth and the competitor.

(4) Information for the guidance of intending competitors will be available, free of cost, at the following places: Australia, the Department of Home Affairs and the Public Works Department of each State; New Zealand, Public Works Department, Wellington; Canada, Public Works Department, Ottawa; South Africa, Public Works Department, Pretoria, and Public Works Department, Cape Town; London, office of the High Commissioner of Australia; Paris, the British Embassy; Berlin, the British Embassy; Washington, the British Embassy; New York, the British Consulate General; Chicago, the British Consulate General.

(5) Applicants must establish their bona fides as intending competitors before being supplied with information.

(6) The information comprises the following: (a) Historical notes, conditions of competition requirements, general information, descriptive matter, and statistics relating to meteorology and climatology; (b) map of preliminary contour survey of country about Canberra; scale, 20 chains =1 inch; (c) map of contour survey of site of Federal capital at Canberra (two copies); scale, 400 feet=1 inch; contours, 5 feet vertical intervals; the trigonometrical meridian may practically be regarded as the local true meridian; (d) topographical map of Federal territory of about 900 square miles; scale, 6000 feet=1 inch (approximately); (e) map of the State of New South Wales; (f) map of the southeastern portion of the State of New South Wales; (g) geological map of the city site, scale 800 feet=1 inch, and two reports by the government geologist of New South Wales; (h) map showing rainfall and temperature statistics of the site for the Federal capital and surrounding district: (j) report by the Commonwealth meteorologist on the climate of the Yass-Canberra district; (k) reproductions of landscape sketches taken from points within the city site.

(7) Competitors will be bound only by the "Conditions of Competition," a copy of which must accompany any designs forwarded by any competitor.

A feature of this world-wide competition contemplates that immediately after the announcement by the minister of the adjudication of the premiums, which will be made at Melbourne within two months of the date of receipts of designs, it is intended to publicly exhibit in Melbourne for a reasonable period all designs admitted to competition. Should the competitors desire on their own behalf to arrange a second exhibition in London or elsewhere, the minister will, if requested, supply as exhibits reproductions from the originals of the premiated designs only.

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The Word Lumber

Every word in our language has a history, and "lumber" is like the rest, though probably not one person in a thousand who uses it knows or even thinks of its origin. It is derived from "Lombard," or long-beard. The Lombards were one of the barbarian tribes of Northern Germany who swept down upon and overwhelmed the effete Roman Empire. Later they became the money-lenders and pawnbrokers of the Middle Ages, and the "lombard" or lumber room was the room wherein the pawnbroker stored his pledges, which frequently consisted of old furniture, boxes, etc. To such material the word came to be applied, and it is still used in England to designate household trash. In America it was early applied to boards, staves, hoops, etc., the product of milling good timber.—Dealers Building Material Record.

Reinforced Concrete Railway Bridge

THE railway bridge over the Werra river in Thuringen, Germany, has several remarkable features. It has a span of 175 feet. The lowest point of the bridge is 2 cm. (6.6 ft.) above the water level. The ground is sharp coarse gravel and well suited to take the foundations of the bridge, whose distributed load is 2.5-3 kg cm² (35.5-42.6 lb/sq. in.). The bridge has two continuous arches spanning the river. These carry the roadbed for the rails suspended by steel cables. The two arches are connected with each other at the top by T-shaped diagonal stiffening frames. The distance between the arches and the width of the bridge is 4.4 m. (14.5 ft.). In order to allow for temperature changes and especially for the tensile stresses in the roadbed due to cooling, the roadway is interrupted at two points, so that the two end parts remain firmly connected with the arches, whereas the central portion is joined to the end portions by expansion and is free to move in the longitudinal direction. The suspension cables holding the roadbed are of steel and not of concrete as was at first planned, because the movement of these cables, influenced by temperature changes affecting the roadbed, would result in excessive tensile stresses near the expansion joints of the latter, which would cause cracks in the concrete cables.

The roadbed is a 12-14 cm. (5-6 in.) thick reinforced concrete slab, resting on two inside and two outside longitudinal girders, which are supported in their turn by diagonal girders set at distances of 4.15 m. (13 ft.). The surface of the roadbed is covered with an asphalt coating. The tracks are laid continuously on a 30-40 cm. (12-16 in.) gravel bed, and the railroad ties can be pulled out sideways enabling rapid renewal. The foundations of the bridge are protected towards the water side by sheet piles.

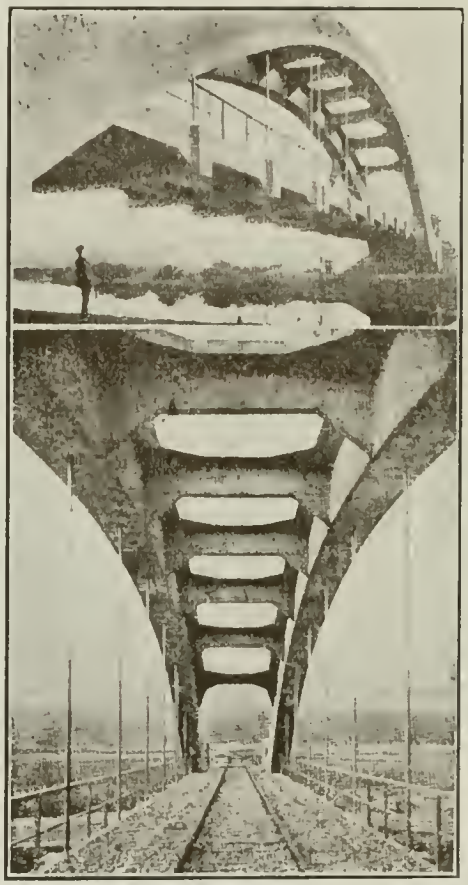

Fig. 1—Two Views of Reinforced Concrete Railway Bridge in Germany

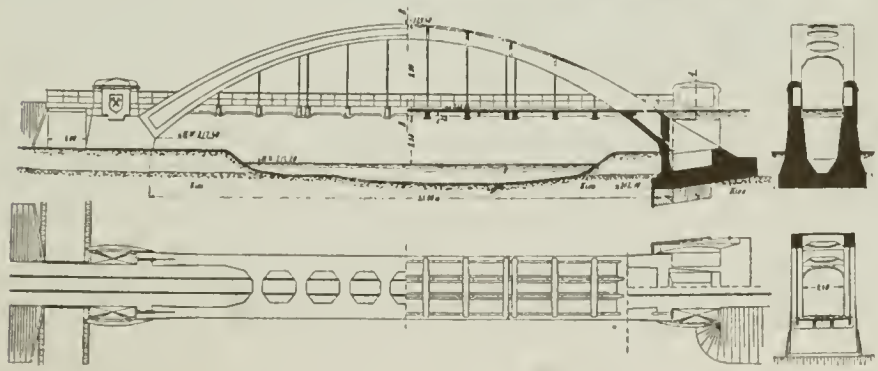

Fig. 2—Plan and Elevation of Concrete Arch Bridge with Suspended Roadway, Thuringen, Germany

Requisites for a Good Veneered Panel

THE following is an extract from a paper read before the National Veneer and Panel Manufacturers' Association by E. K. Pritchett, secretary of the Macey Company, Grand Rapids, Mich.

"I do not believe the average panel manufacturer considers the matter of quality as seriously as he should. From the standpoint of the manufacturers, as well as from that of the users of panels, quality is equally important. On the one hand, panels which are not suited to the use for which they are intended contain the cost of all the raw material, labor, overhead expenses and transportation, which is a dead loss when the panels are refused by the consumer. On the other hand, the consumer is put to great inconvenience and sometimes irreparable loss by the necessity of waiting for panels to be hurriedly made to replace the former lot. This means delay and additional expense, all of which the consumer pays in the long run.

"More or less trouble is experienced in the separating, or perhaps it might be better stated, in the non-binding, of the various plies of the panels. We frequently find panels which, while apparently perfect, will loosen up after a time, and thereby become unfitted for the use to which they were intended.

"The jointing of centers, where more than one piece is used, is important. The center should be well jointed, and on high-class work these joints should be so made as not to be perceptible after the panel is glued up and the finish completed. It is unnecessary for me to go into any detail as to the method of handling glues. I feel it would be out of place for me to do so, for all of you are better informed on this subject than I, but the result of carlessness in the preparation and application of glue is so serious that I cannot refrain from mentioning it. The quality of the glue should be sufficiently high to insure perfect work. When a satisfactory grade has been found, adopt it, and do not be led off for a fraction of a cent lower quotation. I am convinced that much more money is lost in trying to reduce the price of glue than has ever been made thereby. Glue and glue handling is of sufficient importance to be intrusted to some one of a high quality of integrity and absolute reliability."

* * *

Stucco on Brick or Stone Walls

STUCCO is often applied to brick or stone walls, and the instructions already given cover this work completely, with the exception of the preparation of the surface. The surface should be carefully and thoroughly cleaned. First it should be brushed with a wire brush and then gone over with a weak acid, such as vinegar, sour beer, a solution of muriatic acid, etc. Over all old masonry is a coating of dirt containing considerable oily matter, and this will prevent the adhering of plaster if not completely removed. After the wall has been done over then turn a hose on it until no more water can be absorbed. When the surface has shed all the surplus water and is merely pretty damp, begin to apply the stucco. It helps, of course, if the points are well raked, as this gives more chance for bonding.

To prevent streaks showing on account of differences in thickness of mortar, it is well to first fill all holes and raked joints before applying the first coat. That is, the walls should be pointed several days before the

stucco is applied, the pointing to be of the same composition as the first coat of stucco. When applying stucco to old masonry walls the coats should be as thin as possible and contain no lime. The outer coat may be slightly richer than the lower coats, but whenever the mixture is made richer in stucco work care must be taken that the under coat is thoroughly set before putting on the richer coat.—Construction Record.

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Fireproofing Chicago's New City Hall

One of the interesting features of the new city hall in Chicago is found in connection with the method adopted for fireproofing different parts of the structure. For example, instead of fireproofing the columns with wire lath and plaster, they are fireproofed with 2 in. porous hollow terra cotta built two inches away from the extreme projections of the steel work, each course being wired on with No. 10 copper wire. The intervening space between the tile and the steel is completely filled with a rich Portland cement concrete grouting poured into place. All pipes must be set outside of the fireproof covering thus constructed, so as to make it impossible for these pipes to damage the fireproofing. The pipes are again protected against fire by another covering of tile.

The floor construction consists of 6-in. hollow segmental side construction tile arches, spanning the distance of about 10 ft. from beam to beam. The bottom flanges of the beam are protected with 2-in. hollow soffit tiles. Below this fireproof construction an additional fire protection is offered in the shape of a suspended ceiling of incombustible material. In the corridors the space intervening between the tile arches and the suspended ceiling is used as space for pipes. In this manner a double protection is afforded at the place where the heat will be greatest in case of fire.

Above the tile arches the beams are surrounded with 2 in. of Portland cement concrete. Cinder concrete is filled in on top of the floor arches up to a height of 4 inches above the top of the steel beams, and this construction will make it impossible for a fire to damage the top flanges of the beams. By introducing the segmental tile arch the dead weight of the floor construction has been cut down to a minimum.

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Daffy Tacks

"Did you ever have appendicitis?" said the insurance man.

"Well," answered the skeptic, "I was operated on, but I never felt sure whether it was a case of appendicitis or a case of professional curiosity."—Washington Star.

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Lady Customer (in furniture shop)—What has become of those lovely sideboards you had when I was last here? Salesman (smirking)—I shaved 'em off, madam.

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"My uncle used to smoke his pipe and blow smoke rings that would float across the room and ring the door knob." "My uncle," said the other liar, dreamily, "used to blow some that would ring the doorbell."—Tit-Bits.

The Brick Veneer House

ONE of the interesting papers read at the recent convention of the Building Brick Association, held coincident with the twenty-fifth annual convention of the National Manufacturers' Association, at Louisville, Ky., was that on the "Brick Veneer House," by W. E. Dunwoody, of Macon, Ga. In the course of his remarks he said:

The consideration of the subject of the brick veneer house, its cheapness and desirability will be more from the standpoint of the salesman in his efforts to convince the public that "brick is the best building material" than from the standpoint of the builder. My statement will be none the less true, though we will not consider the technical points in the construction of the edifice, but rather the results to be obtained and the advantages and comforts that inure to the owner.

I contend that a brick veneered house is better in every way than any other, except a solid brick house, for many reasons, some of which are as follows:

1. The brick veneered house is warmer in winter and cooler in summer.
2. It can be heated for less cost of fuel.
3. The fire insurance rate is less.
4. The painting is almost nothing.
5. The owner or tenant is free from anxiety on account of a possibility of fire.
6. There is no bother about a possibility of frozen water pipes, making it necessary to scratch in the mud and shiver while the wind blows out the candle, as you look for a place to cut the water off. The man in the brick veneered house sleeps and lets the wind howl and the thermometer drop. He knows he is "freeze-proof."
7. The plastering does not crack near as much in a brick veneered house as in a frame.
8. The cost of repairs is very much less.
9. It is possible to keep a brick veneered house at a uniform temperature from garret to cellar on account of the freedom from draughts, which means increased healthfulness.
10. It is also a fact that while a contractor may sometimes, in a frame house, use some inferior lumber, covering it with paint, and does prevent your finding it out, it is a very easy matter for any one to know whether his brick are first class or not, and so far as durability is concerned he can practically leave that to the manufacturer, for the manufacturer can not afford to make a poor brick, as it would cost him, in most instances, as much as a good one, and the breakage would ruin him.
11. Finally, it costs you only about 5 per cent more on the first cost.

We could take up each of these reasons and discuss them at length, but they are so obviously true that it would be a waste of time.

To these arguments the prospect somtimes replies, "But I can not afford the additional cost." "Well," I say, "My friends, don't spoil a happiness which you are promising yourself when you get to that long-looked-for and constantly receding place, when you can afford it, by waiting too long and making too many preparations for it. We brought nothing into this world and it is certain that we can carry nothing out."

But really a brick veneered house will help one's credit, as it gives the appearance of prosperity, looks substantial and gives the impression

that the owner is succeeding, and everybody, from the banker down, wants to help the successful man.

When building a home one should always build with the idea that he may sometimes want to sell, and we all know that a brick building improves with age, while a frame building begins to deteriorate as soon as the last nail is driven and the last stroke of the paint brush is made. Bricks are more durable than iron, as they do not rust. We can all recall some brick house which has been a landmark from our earliest recollections and which is still in a perfect state of preservation.

But if all this be true, why do we have to persuade any one to build a brick house? One potent reason is the fact that many contractors and architects really do not know what the difference is in the cost between a brick veneered house and a frame house, and this fact is seriously retarding the sale of brick in my section. Ofttimes the minute you suggest a brick veneered house the prospective builder says, "I can not afford it; my contractor or my architect says it will cost me 25 to 50 per cent more; some say even 100 per cent, to build a brick veneered house than to use weather-boarding." And with that idea firmly planted in his mind, you find it hard to get him to give you a respectful hearing.

We are to blame for not pressing brick as the building material. As soon as I found that this situation existed I began an investigation by going to some of our leading architects and contractors. In answer to my question as to what would be the difference between two houses to be constructed exactly alike with the exception that one should be veneered with brick, costing $15 per thousand, while the other should be weather-boarded with No. 1 weather-boarding, I received answers ranging from 5 per cent to 100 per cent in favor of weather boarding. Such an enormous difference of opinions from men, each of whom should have known, made me at once realize where some of my difficulties in interesting my customers in brick veneered houses had had their origin.

In January, 1910, I let a contract for a brick veneered house, in which I specified face brick made by one of my companies and figured in the cost of the house at $15 per thousand. Thus I found from actual experience that the brick veneered house only cost about 5 per cent more than the frame house. This figure is accurate and can be relied upon. Of course, the frame house could be cheapened by taking out some of the foundations, that is, by making them lighter and by using an inferior grade of lumber, but that would make an inferior house and would not be a fair comparison. The man who wishes to build as cheap a house as possible is not interested in this discussion.

* * *

And Then Another

"I like my house all right," said Luschman, "except for one thing. I guess you'll have to fix that."

"What is it?" asked the architect.

"Several times lately I've nearly broken my neck reaching for another step at the head of the stairs, when I get home late, so I guess you'd better put another step there."—Philadelphia Press.

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"Why did you tip that boy so handsomely for handing you your coat?" "Did you see the coat he gave me?"—Tatler.

Economies in Future House Construction*

By HILDER DAW

IT is with diffidence that any seer should speak upon such a subject. The incredible evolution from visualities unto practicalities as we have witnessed in connection with wireless telegraphy, motor construction, halo observations, and other wonders, must be my justification for delivering a brief address, propounded upon speculations of an idealistic character.

Comprehensive nomenclature has defined the evolutions of constructiveness as the "Stone Age," the "Bronze Age," the "Pottery Age," the "Iron Age," the "Steel Age" and the present "Concrete Age."

Marching alongside has been the accompanying "Timber Age;" but now, denuded forests weaken her footsteps; the fire underwriters harass her further progress, and future ages will view timber in the minor roles of tool handles and gangplanks.

Pressed steel will displace timber in windows, doors and other details of construction, while compositions will displace floorings and trim.

Architects and engineers are continually striving to overcome the rising costs of materials and labor; for necessity compels them to careful consideration of all innovations. The engineer particularly aims for strength and durability, the architect for attractiveness; conjointly, they are creating a new world of beauty and improvement.

Inventiveness to produce economies in building operations is dependent upon the receptivity and, perspicacity of architects and engineers. These professions have risen to all requirements; and the achievements we see around us, both in country and town, will live for the enjoyment and edification of the coming race.

Economies in future house construction may be divided into various classifications, viz.:

Wages, Weight, Competency, Values, and Innovations.

Wages: Within the last 20 years we have seen the growth of trades unionism rising from an ethical argument into a controlling and uncontrollable force. The time must come when contractors will receive, as well as be compelled to give, equitable returns for specie.

Weight: Weight involves expense in every direction. Values, haulage, freight and handlings are based upon our scales; therefore, relief must be given by reinforcements in all productions, whether in sewer pipes, steps, slabs, beams, walls or components. Perishable timbers will be replaced by reinforced concrete members whose specific gravity will be counterbalanced by their minor proportions.

Competency: A very present injury to competent contractors is caused by the marauding bands of ignorant workmen. Instigated by unscrupulous architects and engineers who seek to cut prices so that they may propitiate their wavering clients, many a foreman, advised of tendered prices, has been induced to launch his frail bark upon the uncharted waters of mastership.

The remedy for this procedure lies in legal enforcements necessitating a bill of quantities with the plans and specifications. Successful bidders will not then sit paralyzed, wondering what they have overlooked.

Values: Material prices will have to be approved by governmental commissioners, a similar course to that adopted towards railway freight charges.

Economy in building waits upon the removal of the foregoing disturbing factors, as well as upon innovations in construction.

*Paper delivered at the Architectural, Building, Contracting and Engineering Conference, New Grand Central Palace, New York, May 23, 1911.

The immovable laws of the Medes and Persians are paralleled by the antiquated building by-laws of many communities. It has taken many years to convince their authors that reinforced concrete deserved some consideration. Even now a flimsy balloon timber firetrap is admitted in preference to a thin reinforced concrete wall.

The crying evil of the present town life is the cramped quarters, sanctioned by the building by-laws, in which citizens have to live.

About 60 years ago in England, money was raised by taxing window lights. To dodge this iniquitous tax, people bricked up their windows, the result being that their health and eyesight were seriously affected. That lesson has never been forgotten, and our present by-law that requires the window area to be 1-10 of the floor area is a result.

I might here mention that the statesman who devised that window tax became blind. The public unfeelingly commented "He taxed God's light and the Lord has withdrawn the light of the sun from him."

One of the most ancient races of prehistoric man has been classified as the "Kitchen Midden" race, the title being derived from their habits and customs (which were, respectively, non-existent and nasty).

When Macauley's New Zealander excavates amidst the iron oxide dust of our present New York, he will come across indications proving there lived a race who got their food—not by the paleolithic flint—not by the neolithic flint—not by the sling—not by the bow and arrow, but by the tin can opener.

This race will be classified as the delicatessen race, and from measurements he will conclude that the kitchen was three by six feet in area, which area he will know from personal knowledge prohibited any exposition of housewifely duties, afforded no hospitality to the stork, and accounted for the daily flights of the female to the fastnesses of the bargain counter.

The horoscope of building innovations must be plotted upon the present world. Concrete has developed into reinforced concrete; and the nebula of the vitrous age is within our vision.

The coming race will eliminate the use of steel in reinforcements, electrolysis will dissolve our skyscrapers within decades.

Regrets are unavailing and unnecessary. Rapid transit facilities will develop outlying suburbs, whereon the present hives of workers will be distributed.

The telephonic communications, now a necessity and a curse, will be replaced by personal wireless telegraph telephony. Our thumbprints will be sent to selected communicators; magnified into an electrotype, they will be the method of "tuning up" to our correspondents.

Building deteriorations (resulting from earth and traffic tremors), as well as disastrous fires, will necessitate quake and fireproof structures.

These present and future conditions ordain the use of concrete, in all its many adaptations, as our future building material.

Wall construction will be of poured concrete, faced with artistic brick, iron and other ornaments. Plaster compounded with fusible minerals will enable the constructor to cover his structure with preparations, which, when dried and ignited, will result in a vitrous glaze, surpassing in sheens the colors of the mirage.

May this direction of investigation be hastened by chemical research, supported by philanthropists.

Pipes and conduits will be impressed into reinforcing duty, saving thereby space and appearance.

Wall papers will be displaced by tintings, sprayed on to the concrete walls by air brushes. Stencils and bas-reliefs will remove all monotony.

Roof construction will change greatly. The hideous forest of chimneys, as seen in England, are here replaced by a single flue, but even that flue will disappear when our contaminations, whether of dust, air or smoke, will be blown into the sewers, there to assist in the sewage disposal problem.

Smoke abatement will permit of the utilization of our roofs. Flattened into sleeping quarters or roof gardens, they will be bordered by encaustic embellishments and surmounted by pergolas and minarets and cupolas, thereby developing into a new style of architecture that will embody the wonders of the East with the benefits of the West.

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Where Our Hardwoods Grow

By C. H. WHITE

FEW people, even those engaged in the woodworking industries, ever stop to consider the distance and the out-of-the-way places from which their hardwood lumber comes. Take up the stock list of a hardwood lumber concern, for instance. One of the lists covers forty different kinds of hardwoods, and the sources of supply cover every quarter of the globe.

Taking the different kinds of lumber in alphabetical order, we have—

Eastern ash from the Valley of the Mississippi.

Oregon ash from the Webb Foot State.

Japanese ash from Hokaido, the Northern Island of Japan.

Birch comes from Michigan and Wisconsin, although when the Canadian Reciprocity Treaty is ratified by the Dominion Parliament, Canada will probably supply a goodly quantity of birch lumber and logs to the United States mills.

Basswood grows in the same section as birch and maple.

Boxwood comes from the Levant, the principal supply of the boxwood used in the United States being from Turkey.

Spanish cedar grows in the tropical part of the American continent, Mexico and Central America furnishing the principal supply.

The white cedar used in the Coast trade grows in a very limited area in the State of Washington. This is of the same family but a different species of the common red cedar of the Northern country.

The different varieties of camphorwood grow all over the Asiatic Coast and Islands of the East Indies. Some varieties have almost no odor, while the Formosa camphorwood has a decided fragrance which lasts forever.

Carrabean is one of the Australian woods and is not a Eucalyptus, but belongs to the second great family of Australian woods known as the beans, such as Redbean, Carrabean, Blackbean, etc.

Cherry and elm are both Northern hardwoods from the Northern part of the United States and Southern part of Canada.

Genuine ebony comes from Africa, the Island of Madagascar furnishing the principal supply. In Mexico there is a wood which the natives call Ebano which is not true ebony, but quite similar.

Genezero has the same habitat as Spanish cedar and mahogany on the American continent, Central America at the present time furnishing the principal supply.

Southern red gum is a wood grown principally on the river bottoms of the lower Mississippi and tributary streams. This wood is coming very rapidly into favor.

The sources of hickory are practically the entire Mississippi Valley, although the best hickory comes from Indiana at the present time, Ohio and the states further east being practically denuded of this kind of wood.

Ironbark is an Australian wood of the Eucalyptus variety, as is also spotted gum.

Koa is from the Hawaiian Islands and is a very beautiful cabinet wood.

Laurel is practically the only California hardwood which is of merchantable value.

Lignumvitae is a tropical wood, the principal sources of supply at present for the Pacific Coast market being Mexico and Central America.

Mahogany comes from the tropics in all parts of the world. The East Coast of Mexico and Central America furnish this wood to the Pacific Coast market, as well as the West Coast. Africa also supplies a variety of Mahogany for this market as do also our own Island possessions in the far East, the Philippines. This latter is not a true mahogany although it is known to the trade as Philippine mahogany.

Eastern oak comes from the Mississippi Valley, North and South Indiana furnishing the best quality, such as bending oak for boat work, etc. Arkansas is at present the principal shipper of plain and quarter sawed oak.

One of the principal items in the Hardwood business on the Pacific Coast is the oak from the Northern part of Japan. This is sometimes called Siberian oak, but the Island of Hokaido in Japan supplies the entire amount imported into this country, and this industry is a very considerable one at the present time.

Primavera is a Mexican hardwood and is in reality white mahogany, the grain being the same as the red mahogany.

Poplar comes from the mountain regions of Ohio, West Virginia and Kentucky.

Rosewood is of many varieties, the Brazilian wood is the kind which has the odor of roses and is used principally for musical instrument work. The Mexican rosewood, or Cocobola, is imported in the largest quantities.

Sonokling is a variety of East Indian rosewood, being imported from Java.

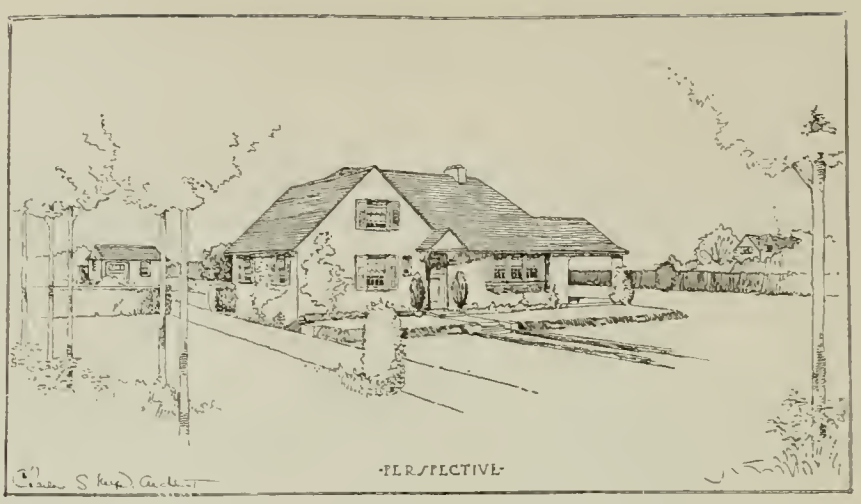
Sycamore is one of the Eastern American hardwoods, as is also Locust, although the latter has been planted in a number of places in California and the growth is sufficient to supply quite a portion of the home demand for Locust Treenails.

Teak is generally imported from Siam, and the Island of Java, although there is an Australian wood known as Island teak. Siam and Java teak are of the same family and differ very slightly but the Island teak from Australia is of a different species entirely, being one of the Bean family.

Walnut, our cabinet wood friend of twenty-five years ago, formerly grew all over the Eastern part of the United States and the Mississippi Valley, but several generations of woodworkers have almost denuded our country of walnut, so that now it is a high priced wood and very scarce.

All the woods mentioned in the preceding paragraphs are in every day use on the Pacific Coast and it will be seen by the above description that there is a lot of geography attached to the hardwood business. A dealer in this material is obliged to keep in touch with all parts of the world.

The getting out of the hardwood logs is in most cases very difficult and in a number of instances very dangerous. Unfriendly and warlike people are often encountered in the primeval forests which the seeker after rare cabinet woods must invade in his quest for trees. In Africa is encountered the deadly tzetze fly which causes the sleeping sickness. These difficulties and dangers all tend to make hardwood expensive, but we must have it. Metal has been used as a substitute for hardwood for a great many uses, but can never entirely supersede it.

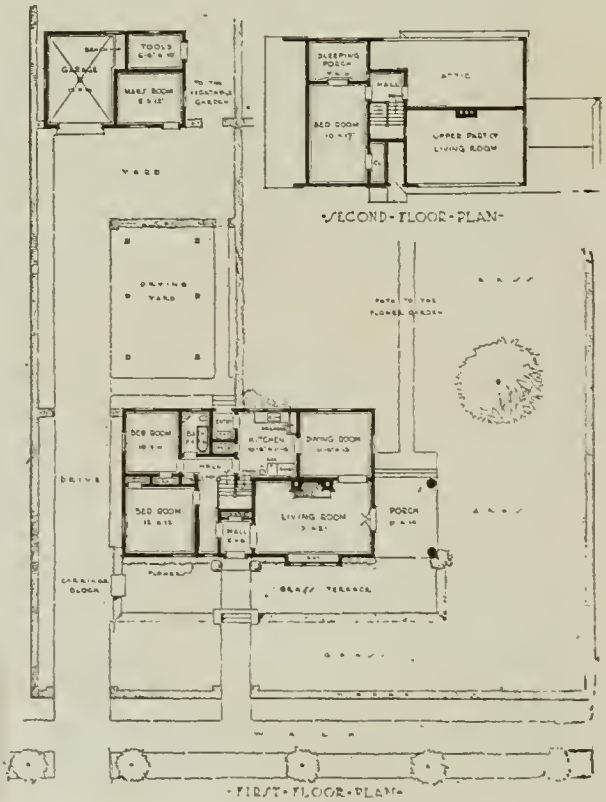


The Bungalow from an Eastern Architect's Viewpoint

CHARLES S. Keefe, a New York architect, has developed some interesting ideas in bungalow design, as the accompanying plans and perspective show. The first floor arrangement is very effective. The two bedrooms and bath are en suite. The one chimney serves both the fireplace in the living room and the kitchen range. The high ceiling living room, with a fireplace, and opening into a side porch, should be very livable.

Upstairs, the one bedroom, sleeping porch and attic complete the house. A garage, providing sleeping quarters for one person, is also included. The modern ideas in design make for simplicity. Hallways are omitted where possible, and all space is utilized to the highest degree possible.

In the construction of this bungalow, says Cement Age, concrete could be used to advantage as the straight and simple lines of the walls without ornament, make a good medium for concrete. All exterior work, such as porch floors, walks, garden fixtures, etc., would be in concrete. We are in a new age, where the most plastic, permanent and useful of building materials is helping us to build beautiful homes.



Two New State Laws that Directly Concern the Architectural Profession

By JOHN BAKEWELL*

AT THE last session of the California State Legislature two laws were amended that concern the Architectural profession. The first was the amendment to the Lien law, passed in the interest of the materialmen and sub-contractors, and second the amendment to the Tenement house laws, passed in the interest of the dwellers in tenement houses and incidentally the health of a large portion of the community.

That tenement house legislation is absolutely necessary has been realized by all of the larger American cities, and in this they have simply followed in the footsteps of the great cities of Europe, which have laws much more drastic and far-reaching than we have yet dreamed of. And San Francisco is no exception to the rule, as our congested districts on the one hand, and our empty lots on the other, very strikingly show. For overcrowding in one part of the city means empty lots in other parts. We only have a certain number of possible tenants, and if they are crowded into a few districts the other districts must perforce suffer.

Although the tenement law does not pretend to remedy this evil of an unequal distribution of population, still it does have a tendency to regulate it somewhat, in so far as it prevents the undue overcrowding of any one lot or block.

But a discussion of tenement house legislation in general is hardly in place here as it is a matter of general rather than technical interest.

Suffice it to say that the architect in planning any building used as a dwelling, holds the health of its future tenants in his hands. A good plan with light airy rooms supplied with sanitary conveniences, gives the future tenants a chance to be healthy, while a poorly planned building with dark poorly ventilated rooms and equipped with unsanitary plumbing gives the future tenants no chance at all. This is self evident and indisputable, and the only conclusion to be drawn from it is that the architect is in duty bound to consider, not only his client's interest but also that of the future tenant of every dwelling that he is called upon to plan. These two interests are fortunately not conflicting ones. What makes for the comfort of the tenant is certainly to the interest of that tenant's landlord, especially if it can be obtained without undue sacrifices.

An architect who is really looking out for his client's best interest carefully studies the possibilities of his plan and tries to arrange it so that every room will always be rentable, and if possible so that every room will be comfortable. When it is necessary to sacrifice some rentable area to achieve this result it is done, but not until a search is made for some other arrangement that will get the good results without the sacrifice. There nearly always, however, are places where it is advantageous to make some sacrifice to achieve the best results. However, when the architect is not willing to spend the time necessary to find such an arrangement of plan as will give good rooms with the least possible sacrifice of area, or when the architect, or more often the builder (as many tenement houses are not designed by architects) is not sufficiently trained or sufficiently ingenious to find a way out of his difficulties in a successful solution of the plan, then one of two things is sure to happen. He either neglects the most important principal of planning, that of adequate light, or else he turns out a plan which will never bring the owner in any revenue.

* Senior member of the firm of Bakewell & Brown, Architects, San Francisco.

Of course the State cannot interfere between an architect or builder and his client, but it can lay down certain rules to protect the health of the community, and as every dark and unventilated tenement is a menace to the health of those who dwell in it, the State has undertaken to lay down certain rules to prevent the worst effects of poor planning. This is, of course, a very difficult thing to do. All laws must be general in their application and general provisions do not always fit special cases. As a consequence the first tenement house law passed by the State Legislature had many defects. The law was amended at the last session of the Legislature and many of the objectionable features were removed.

Senator Burnett, the author of the law, has been very conscientious in his efforts to make it as nearly perfect as possible, and has spared neither time nor labor in the consideration of all complaints and the attempt to remedy any defects in the old law. He realizes, as every one must, who has gone into this question, that there are two things to be considered: First—the interest of the community represented by the tenants, and Second—the interest of the individual represented by the owner. Fortunately, a great many of the provisions of the law are in the interest of both of these parties. However, there are some provisions that favor the tenant and others that when applied to certain peculiarly shaped lots work a hardship on the owner. Where this was the case Mr. Burnett has tried to give the owner every advantage possible without seriously imperiling the health of the tenant. In other words, has tried to find the point where the advantage to the tenant outweighed the advantage to the individual.

The law will, in many cases, necessitate the employment of an architect who is willing to seriously study the problem instead of the haphazard rehash of an old and probably an inferior plan by an untrained and inexperienced contractor. This we consider to be really to the advantage of the owner.

The revised tenement house law is divided into different groups of sections.

Group 1—General provisions and definitions.
Group 2—Provisions relating to new buildings.
First—As regards light and ventilation, including sections relating to yard, courts and windows.
Second—As regards sanitation.
Third—As regards fire protection, including sections relating to stairs.
Group 3—Provisions relating to alterations.
First—As regards light and ventilation, including sections relating to yards, courts and windows.
Second—As regards sanitation.
Third—As regards fire protection.
Group 4—Provisions relating to maintenance.
Group 5—Improvements required in old buildings.
Group 6—Requirements as to permits, fees and penalties for violation.

In other words the law has been rearranged in an orderly way so that the architect or builder can easily find what he wishes to look up.

The requirements as to yards and courts and percentage of lot occupied are the ones which affect the architect and owner the most.

The advantage to be obtained by a combined yard running through the center of the lot is self evident in most cases. There are cases in certain irregular corner lots and in gore blocks where the law does not work out as well as it might, but in the great majority of cases it works an advantage to the owner.

The question of courts is a simpler one as here it is simply a matter of determining what size of court in a building of a certain height will give enough light in the lower rooms to make them habitable.

The sizes of courts required are smaller than what every architect would like to use but the temptation of adding a little more rentable space, and possibly a room or two by the reduction of the light courts to a minimum has made such restrictions very imperative, especially in the poorer districts where people can be found who are willing to occupy any room no matter how unlivable.

The question of percentage to be left unoccupied is a very difficult and complicated one. The percentage required should vary according to the height of building just as the size of court does, but the general usage seems to be to set a certain percentage irrespective of the height of building. This naturally has a tendency to make such percentage of unoccupied space larger than necessary in a low building and smaller than advisable in a high building. The percentage set in the California law is more lenient than in that of other states and cities. Whether this is an advantage or a disadvantage depends a good deal upon the point of view of the observer, but as the size of yards and size of courts works independently of this percentage basis, we do not see that it is a matter of great importance.

* * *

Doings of the San Francisco Architectural Club

By E. H. HILDEBRAND, President

THE Atelier of the San Francisco Architectural Club opened on August 5th with an Archaeology Problem.

The formal opening of the season of 1911-12 will be on Saturday, September 23 at which time will be given out the first Analytique and Class B Problem; the same afternoon there will be nominations and an election of officers for the Atelier, consisting of a Massier and two Sou. Massiers.

The Architectural League of the Pacific Coast has collected funds for a $1000 scholarship which will be available at the end of this season. The committee as yet has not decided on the actual details thereof.

The club is also holding a competition for a Certificate of Membership. The winning design will be printed and presented to each member of the club.

The educational value of the Atelier system of architectural training can not be over valued and is largely responsible for the rapid strides which American architecture is taking. The Atelier system concerns itself more with the broad principles of architecture, of the laws of composition, mass and proportion and the proper use of ornament, furthermore it evolves a method of expressing these things intelligently, which is peculiarly suitable to the student, first grounding him in principle and then developing in him power to express them in his own individual interpretation.

The status of any profession is a resultant of its efficient service; it is necessary not only to know not how to do, but why, and such knowledge is the product or aim of the Atelier educational methods.

It is, of course, understood and assumed, that aptitude for special training is a prerequisite for securing efficiency in any educational scheme, and that a successful educational result can only be obtained when the natural endowments are harmoniously related. Coupled with this must be enthusiasm. Eliminate that quality of divine pulsing and all your scholarships, all your learning, all your aptitude for this or that falls as a dead weight (a glass of wine that has lost its sparkle.)

Mr. George W. Kelham, Mr. Arthur Brown, Jr. and Mr. Loring P. Rixford, all of whom are accorded a high place in the profession, will be the patrons of the Atelier.

The architects of San Francisco are beginning to realize more and more, that to have draughtsmen who are members of the Club's Atelier means a certain standard of efficiency and they are giving their financial support to the club by their subscriptions to the scholarship and membership in the club, which brings a return to them in better work and draughtsmanship. Some architects are making a draughtsman's membership in the Club's Atelier a requisite for employment in their office.

In addition to the Atelier, the Architectural Club will conduct during the coming season its usual other classes, including Architectural Steel Construction and Calculations by Professor Charles Dereleth, Jr., of the University of California, Life Class and The Outdoor Water Color Class by Arthur O. Johnson and the Architectural History Class in charge of August G. Headman and the usual monthly special lectures by eminent men of the profession.

At the last regularly monthly business meeting the following were elected as regular members: Will Toepke, F. S. Steward, Raymond Shaw, F. A. Chapman, B. R. Maybeck, Geo. W. Armitage, W. W. Harper, Howard R. Schulze, Fred W. Brauer, T. L. Pflueger, C. M. Norgrove, W. W. Eckley, George Kelham, Edward T. Foulkes and George M. Cantrell.

At this meeting Mr. Pratt of the Golden Gate Brick Company extended an invitation to the members to inspect the Golden Gate Brick Plant at Antioch and to provide for the subsistence and entertainment of the members while at the plant; the Club has accepted Mr. Pratt's generous offer and is making arrangements to go on the trip via the Stockton boat on the next moonlight night which would be October 7th.

Mr. John Lettich has presented the Club with a beautiful nickel plated sanitary drinking fountain which has been installed in the billiard room.

On Thursday evening, August 31, 1911, Mr. G. Albert Lansburgh, the architect, gave the first of a series of three lectures upon Renaissance Architecture.

Mr. Lansburgh's first lecture was upon the Renaissance Architecture of Italy which on account of its proximity to Grecian and Roman remains, was naturally the starting point of the Renaissance. He traced in a most interesting manner, the growth of the Renaissance from the proto-Renaissance of Pisa to its fullest development in Florence under the patronage of the De Medici family.

The lecture was illustrated with stereopticon views, most of the slides were made from photographs personally taken by Mr. Lansburgh in Italy and showed charming compositions.

The next lecture will be on the Renaissance Architecture of France on September 21, 1911.

On Saturday evening, August 21st, Mr. Albert Lapachet and Mr. Thomas Bendell the two popular wheel-horses of the Architectural Club, who are going to the University of Pennsylvania for two years to further their architectural studies, gave a complimentary dance to the members of the Club It was one of the most enjoyable dances ever held at the Club and the pleasant recollections of the good time will linger long in the memory of the members and the lady friends. The order of dances were printed on an original souvenir card.

On behalf of their Club friends Mr. Ernest Hildebrand presented Mr Lapachet and Mr. Bendell with a beautiful traveling set appropriately inscribed and congratulated the near travelers upon having realized the goal of every ambitious draughtsman namely a University Training and wished them success in the City of Brotherly Love.

With the Contractors

Segregation Versus General Contract

By FREDERICK JAMES

ARCHITECTS generally prefer to let a general contract for all the work on a buliding, or at least for the greater part of the work. There is, however, at this time a very considerable amount of segregated work being let in San Francisco. There are several reasons for this, and perhaps not the least of these is the fact that the building business is dull and owners can only be induced to build by getting the lowest price possible on their buildings. When low prices prevail the best class of general contractors will not get the work, because they cannot afford to do the class of work a low price makes necessary; but the owner is there with his ultimatum of a low-cost limit beyond which he will not go. "Bring down the cost," he says, "or keep down the building." Confessedly, the architect finds himself between the devil and the deep sea. The question of price is the sole consideration, and to this he is called to sacrifice every other element, willing or unwilling. He starts to trim. He trims on design, on quality of material, on fixtures and at every possible point, and still fails to bring down the cost within the limit. He gets into the field of supervision of the work. Very few owners have the inclination or the time to devote to watching their jobs and harmonizing the different sub-contractors and trades workers, as is necessary to the prompt and economical progress of the building, and still fewer have the requisite knowledge and experience. Under pressure of the owner the architect finally finds himself outside of his own field, taking upon himself an added work, which is neither congenial or remunerative to him—the supervision of the work himself.

There must be general supervision of the work on any building, and if no general contract is let the carpenter contractor is called upon to see that the rubbish of the other contractors is cleaned up, and is obliged to do more or less supervising of the work in general. It frequently happens that one of the specialty contractors will hold up some other branch, or all of the branches of the work, and if his contract is direct with the owner, and the owner sees fit to allow him a delay of two or three weeks before commencing his work, the other contractors are obliged to lie idle on the work and leave their money invested in the building for that additional period. The interest on the money of the contractor is worth as much to him as it is to the owner, and he must figure these contingencies if the work is going to be segregated. Where the plumbing and electrical work are segregated, it frequently happens that the floors are all laid, and the plumber or electrician comes along and rips out the work to provide space for the laying of his pipes or wires. The carpenter must then go over this work, and charge must be made for this extra labor. If the work is let as one contract the general contractor can then instruct each of his specialty contractors as

to how and when they shall perform their part of the work so as not to conflict with the other parts, and when the whole building is completed all general work has been cared for with the greatest economy.

Many of the men who can be secured by the architect to superintend work are those, first, who have failed as general contractors, or are young and inexperienced. Such a superintendent is of little real value to the owner. If he is dishonest his supervision is no supervision at all. The work proceeds in an inefficient manner, and the building when finally completed will never be a credit to the architect or a profitable investment to the owner. There are many good responsible men among the specialty contractors. There are also many who are doing business on a shoestring, and will seek to defraud the owner at all times. Having no reputation at stake they have nothing to lose. With an inefficient superintendent on the job there is nothing to prevent wholesale skullduggery, and the quality of the finished work is bound to suffer for it. Complaint is sometimes made that the general contractor sublets his work to this class of specialty contractor, thereby creating trouble for the architect. This, however, is seldom the case where responsible general contractors are employed. However, when architects insist on pitting the general contractor against the specialty contractor by calling for bids on a building as a general contract, and at the same time asking for segregated bids, the inevitable result is a demoralization of the business, and cheap and irresponsible specialty contractors may slip in. One has only to look around this city to see on all sides buildings erected after the fire where the owner sought to save money by substituting an inferior quality of material or saving in labor in order to cheapen construction. Such buildings are today vacant, and they will remain vacant so long as there are better buildings to be had. Conservative owners recognize that there is no economy in cheap construction.

In the main, the reason why the competitive bid of a high-class general contractor appears to be higher than the aggregate of specialty bids, plus the necessary items for risk, supervision, etc., is because he expects either to do a higher quality of work or the architect proposes to donate his own time without pay for this portion of the work; and here the question may be rightfully asked: "Which is the best contractor—the general contractor or the architect?" The builder who has had wide practical experience in erecting buildings, in handling specialty contractors, whose knowledge of materials and workmanship and prices are extensive and intimate, is undoubtedly in the best possible position to attend to all those details that are a part of the construction of every building.

Under the new lien law it is very necessary that the architect select a responsible contractor for his work, and it is certainly much easier for the architect to find one good responsible general contractor than it is to find a dozen responsible specialty contractors. The legitimate architect seeking to erect a good building that will stand the test of time and be a real credit to himself, can make no mistake in letting the general contract to a legitimate contractor for all the work. In the long run he will find he has done himself and his owner a good turn. With competition as keen as it is the architect may rest assured that he will get as low a figure from the general contractor as is consistent with high-class work and good business methods.

* * *

A New Contract Form

The General Contractors' Association, in conjunction with the Builders' Exchange, is now adopting some slight changes to the old form of

contract which has been in use by both bodies. It is proposed to make this new form cover a few slight changes suggested by the new lien law. Both organizations have employed Mr. Alex G. Eells for their attorney in this important matter, and the forms will be exactly alike. Some new clauses are being put in which will no doubt meet with the hearty approval of the architect and owner, and a few slight changes are being made to protect the contractor's interest.

The General Contractors' Association is also adopting a form of contract for use of its members when subleting work. The need of this latter form has been felt for some time, and particularly under the new lien law it is very necessary that the general contractor should have a proper form of contract with his sub-contractor which will protect the owner, architect and general contractor alike. Where the job is a large one a bond will be required from the sub-contractor if his standing is not well established in the business. While many general contractors have in the past sublet their work without any written contract, this practice will largely be done away with in the future.

* * *

Association Notes

The members of the General Contractors Association of San Francisco are a unit in favor of the work on a building being let as a general contract, including most of the sub-branches of the work. While there is little objection to certain branches of the work being segregated, there are numerous branches which should certainly be included in the general contract. The Association, in putting in its jurisdictional claim to the affiliated bodies, has taken no arbitrary stand on this matter, but has reserved the right for its members to take contracts as a whole. This is a moderate attitude, and should prove a practical demonstration to the specialty contractor that the general contractor seeks to give him a fair deal and acknowledges his definite field in the building business.

While it is likely that owners will continue to withhold 25 per cent of the money due on a building until 35 days after the work is accepted, the new California lien law does not make this necessary, and the owner, if he so desires, can pay the contractor in full on acceptance. A case in point was recently recorded where a San Francisco contractor was awarded a contract for $34,000, and the contract called for the final payment on the building to be made on acceptance of the work. In this case one of the large banks of the city was loaning the entire amount of the money for the building. The matter of paying the contractor in full on completion of the work was put before the attorney of the bank and promptly approved by him. This is a matter of considerable interest, insomuch as there has been more or less opposition to the new lien law from some of the banks.

* * *

Going Out of Business

Despite a denial by Mr. Hicks himself, it is generally believed in the local building and architectural circles that the firm of Lewis A. Hicks Co., contractors, in the Humboldt Bank building, San Francisco, is retiring from the California field, with the intention of operating exclusively in Oregon and Washington, where they now have considerable work on hand.

Some months ago Mr. Hicks, over his own signature, signified his intention of leaving this territory, and since then has reduced his working force and office staff, stating that he would close this office.

WILLIS POLK

Mr. Polk has been made Chairman of the Architectural Board of the Panama-Pacific Exposition to be held in San Francisco in 1915. Polk's associates on the commission will be Clarence R. Ward and W. B. Faville. All three are eminently fitted for the important work in store for them, forming a combination that at once represents genius, talent, originality, experience and judgment.

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Oakland Architects' Society

Meets Third Monday Each Month.

PRESIDENT.....LOUIS S. STONE
SECRETARY-TREASURER.....WILLIAM J. WRIGHT

Construction of Theatres.

According to a new amendment to the Los Angeles building ordinance recently adopted by the city council, all theatres and theatre buildings are to be of class A construction throughout. No building, not now in actual use for theatrical purposes, and no building hereafter constructed can be used for the purpose unless it conforms to the requirements of the ordinance. In addition to the provisions of the ordinance every theatre shall be provided with appliances and equipment for fire protection; together with automatic sprinklers, fire escapes, etc.

San Francisco Chapter A. I. A.

By SYLVAIN SCHNAITTACHER, Secretary

The regular monthly meeting of the San Francisco Chapter, American Institute of Architects was held at the Tait-Zinkand Cafe on Thursday evening, August 17th. After dinner in the absence of Mr. Mooser who arrived later, the meeting was called to order by Mr. McDougall. Members present were:

Wm. Mooser, pres.; G. B. McDougall, vice-pres.; S. Schnaittacher, secy.; Applegarth, Barth, Bliss, Wm. Curlett, Day, Devlin, Hatch, Headman, Joseph, Krafft, Lichtenstein, MacDonald, McCall, Mott, Paff, Pissis, J. W. Reid, Ross, Schroepfer, Schulze, Scott, H. C. Smith, Vogel, Voorhies, Werner and Wythe. Mr. A. F. Rosenheim of Los Angeles, a director of the Institute, was present as a guest of the Chapter.

Owing to the failure of the secretary to notify the committee in time, no report was received from the committee appointed to report to the Chapter a form of contract between architect and owner, embracing the revised schedule of charges of the A. I. A.

Mr. Fred J. DeLongchamps, having filed the necessary application for Chapter membership and having been balloted upon, Messrs. Scott and Hatch were appointed tellers to count the ballots. Thirty-nine ballots were received and counted, and Mr. DeLongchamps was declared unanimously elected to membership.

Communications were received and ordered placed on file as follows: From Mrs. John M. Carrere, acknowledging and thanking the Chapter for its expressions of sympathy; from Glenn Brown, regarding the International Congress of Architects at Rome; and from the Institute of Technological Design, in regard to subscription to the Christopher Columbus monument fund.

Mr. Mooser was called upon by the chair to give an account of his trip abroad, which he did briefly. He said that California was to be congratulated for being the only state properly represented at the Turin Exposition. He also took occasion to state that the Chapter was to be congratulated for the progress made in its recognition by the Exposition company.

Mr. Pissis being present after an extended trip abroad, was also called upon, and expressed his pleasure at being home again.

Mr. A. F. Rosenheim, the guest of the evening, was called upon and took occasion to ask the assistance of the Chapter in the work of the Architectural League and appealed for harmony in the work of the Chapter toward increasing the Institute membership.

Messrs. Day, Curlett, Schulze and Mooser followed Mr. Rosenheim, speaking with reference to the latter's remarks.

Mr. Krafft, recently elected to membership, was also called upon for a few remarks.

Thinks Oakland Lumber Specifications Too Strict.

The following letter has been received in response to an inquiry of the Hogan Lumber Company of Oakland, which had rejected a lot of lumber intended for use on a building under construction for District Attorney W. H. Donahue of Alameda county:

Answering yours of the 21st inst. relative to lumber rejected on the W. H. Donahue job, beg to say, the joists and timbers were rejected on account of the strict specifications which do not permit of knots larger than two inches in diameter, therefore we were obliged to deliver strictly Select lumber instead of No. 1 Merch. This might have happened to any yard on the coast and it is the first time we have met with such strict specifications where the owner insisted upon living up to them.

We have had all the rejected lumber inspected by the Pacific Coast Lumber Inspection Bureau and they report the lumber a good No. 1 Merch. at least 90 per cent of it, so you see we have no chance for argument.

No doubt some of our enemies say the lumber is inferior because it came from our yard. They have said a good many mean things about us at different times in the past but have not hurt our reputation.

We have been in the lumber business in Oakland for the past twenty-two years. We started on a very small scale and are now one of the largest firms on the coast and it has been good lumber, square dealings and good management that brought our success. We are willing to stand by the unions just as long as we are in business and just as long as the unions do what we think is right.

Trusting we have made our position clear to you, we remain,

Yours very truly,
HOGAN LUMBER CO.,
Hugh Hogan.

Another Hotel for Los Angeles.

Eisen & Son, of Los Angeles, and Wm. Curlett & Son, of San Francisco, are preparing plans for a seven-story and basement, class A, reinforced concrete hotel building to be erected at the southeast corner of Sixth and Figueroa streets for C. W. Gates, Consolidated Realty building. It is being designed for an eleven-story building, it being planned to add four more stories later. The building will contain eight stores and the hotel lobby in the first story. The lobby will be finished in marble and tile and the stores will have plate and prism glass windows and copper sash. There will be 192 guest rooms and about half as many bath rooms. The interior finish throughout the guest rooms will be Oregon pine with finished cement floors. There will be two electric passenger elevators, bronze elevator enclosures, freight elevator, steam heat, vacuum cleaning system, fire escapes, wire, glass, etc. The construction will be of reinforced concrete, concrete floors, hollow tile interior partitions, cement plastered exterior finish, galva-

nized iron cornice, composition roof, sidewalk lights, etc. The cost will be about $185,000.

Atelier Work of San Francisco Architectural Club

The regular season of the S. B. A. A. Atelier work began Saturday, August 5th, with an Archaeology problem.

The next problem will be on Saturday, September 23rd, and will be the first Analytique and Class B problem of the season. The same afternoon there will be nominations and an election of officers for the new season, the present officers remaining in charge until the election.

The registration fee of Two ($2) dollars must be paid before September 23rd to avoid future trouble and confusion. Fees to be paid to the present Massier who will turn same over to the Society's representative.

There is to be a scholarship prize this season, funds for which have already been obtained.

A competition for the design of a Certificate of Membership is to be held soon, particulars for which are to be posted on the Bulletin Board.

Architects Want Publicity

A newspaper dispatch from Oak Park, a suburb of Sacramento, contains the following interesting and somewhat amusing paragraphs:

The Committee in charge of the beautification of the triangle at the intersection of Sacramento, Magnolia and Thirty-fourth streets reported that the county had completed the improvements asked for by the Association and that a seven-foot cement sidewalk with concrete curbs and gutters has been laid.

Two architects have volunteered to submit designs of a drinking fountain and other appropriate ideas for the beautification of the triangle.

Considerable rivalry is being manifested among the architects offering designs as each one desires the honor of having his name inscribed on the fountain.

Will Use California Materials

California materials, wherever they can be used, will go into the construction of the new subtreasury building, at San Francisco, according to J. Milton Dyer, the Cleveland architect, who was awarded the commission of building after a competitive bid for designs.

The new building will be located at Pine and Sansome streets. Congress has already appropriated $500,000 for its construction. It will be a two-story structure, with the main floor given over to a forum, with offices for the assistant treasurer and his asistants. On the second floor there will be a number of offices.

Other branches of the government service besides the subtreasury may find their home in the structure.

Architect Dyer, who was in San Francisco the past month, expressed himself strongly in favor of California building materials, notably for California granite.

"Every effort will be used to have the building constructed with the materials at hand," Dyer said. "Senator Ralston and I have gone over the plans and find that the original drawings suit conditions admirably. I shall make some investigations as to the foundation and to the necessity of using piles. Work on construction should be begun by the fall at the latest."

Ralph W. Hart to Continue As Architect for American Biscuit Co.

It is announced that Ralph W. Hart, Humboldt Bank building, San Francisco, will continue as architect for the American Biscuit Company, whose big plant is at 815 Battery street, San Francisco. Hart planned the buildings now occupied by this firm and which were erected soon after the fire. After putting up the buildings some friction arose between the officials of the company and the architect and several suits followed in the local courts. Matters have recently been adjusted and as before stated, Hart is to continue as the company's architect and will take charge of all future construction work for them. Some alterations and improvements are already planned.

To Hold Competition for Big Auditorium

Anticipating the second world's Christian Citizenship conference, the city of Portland, Ore., has appropriated $350,000 for the erection of an auditorium seating 20,000 persons. The chief feature of the building will be the largest organ in the world. The structure is to be completed by June 27, 1913.

Ellis F. Lawrence, the well known Portland architect, has been selected by the auditorium committee as advisory architect. Mr. Lawrence may also be retained to superintend the work during the construction of the building. The plans will be competitive, and the program is now in the hands of the contestants.

Oakland Architects Enjoy Outing

Sixteen Oakland architects were royally entertained recently at the Contra Costa county ranch of Louis A. Stone. The party motored to the country and upon arriving at their destination found an old fashioned barbecue awaiting them. Mr. Stone acted as chef and his guests one and all voted him a Class "A" cook. Some of the party remained at the ranch over Sunday while others returned to their homes earlier.

Concrete Hospital

Architect Julius Krafft & Sons, of San Francisco, have made plans for a reinforced concrete hospital building to be erected at Post and Scott streets for the Mt. Zion Hospital Association.

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From Chicago we hear that $30,000,000 is about to be expended in the construction of tall buildings.

ART IN THE SKYSCRAPER

A new ordinance which became effective September 1st, limiting the height of all buildings to 200 feet, is said to have been responsible for the unusual record of the past month. Owners who commenced work prior to the first of September can build to the 260 foot limit. All others must conform to the new ordinance, and this leads us to question the wiseness of our municipal authorities in fixing a height limit, for there is, in fact, much to be said for the high building.

Height is an impressive quality, in a man or an edifice, and it is not surprising that architects should be fascinated by this modern and unprecedented opportunity to go as high as they please. The Gothic builders struggled for height, heaped stone on stone till walls cracked and towers toppled. Much of their work is either unfinished or prematurely decayed through their ambition to attempt what the modern builder does with the utmost ease. When it was difficult and rare, height was admired; now it is a commonplace, and only rustics lift their eyes. The poet sings the "topless towers of Ilium," and he means towers. In a city of skyscrapers towers cease to exist.

It was but recently that we printed Sir Ashton Webb's praise of the American skyscraper before the Royal Society of Arts. Mr. Webb, at the same time, took occasion to indorse the paper read before that body, by Frank M. Andrews, a New York architect, who declared our skyscraper to be the most interesting thing America has to offer, because it is absolutely original with us. And great credit must be given to our architects for the masterful way in which they have dealt with what Mr. Andrews calls "our most unruly problem."

As for the beauty of any building, high or low, that must depend

upon the quality of the art put into it. Towers are beautiful, so are Greek temples. But the question in a city is not one of abstract beauty, as though the building were to stand alone, but how a given type of building will get on with its neighbors. Mr. Andrews compares the high building to a column, with base, shaft and capital:—

> In all of the best and most pleasing examples of the later work this element appears, and we find the lower stories grouped in a single architectural composition supporting a long vertical and shaft-like series of stories grouped into a simple treatment that carries the eye upward without interruption to the crowning feature of the entire design, which again is a series of stories combined into the capital, as it were, of the mass.

In San Francisco we have some pleasing conceptions in tall building architecture. None that we could mention would answer our argument better than the Claus Spreckels or Call building. Here is a structure one never tires of. Its grace and beauty appeals strongly to the lover of the artistic and compared with some of the near-by monstrosities that have sprung up since the fire, the Call building stands out like a Venus in a gallery of imps.

CONSERVATION AND WASTE

According to a reliable statistician the total loss from fire in the United States during 1911 was $500,000,000. This represents a waste of $1,369,863 for every day of the year, $57,077 for every hour, $951 for every minute of the hour, and almost $16 for every second of the minute. Just grasp the significance of that statement for a minute. Every time the clock ticks $16 of our national resources is wasted. The term "wasted" is here used in its real significance, because the fire loss is absolutely irretrievable. The insurance on a burned building does not bring back the property that was destroyed, nor the value of the property that was destroyed. The insurance money creates nothing; it simply equalizes the loss between all others whose property is insured.

To the individual the loss of his property might be partly indemnified, but the building itself, its contents and the materials of which it was composed are absolutely wasted and vanish from use forever.

And the saddest part is that all this waste is preventable; the wealth could be conserved for posterity if we would but plan our buildings right in the beginning. We have only to select of the inexhaustible materials at hand, fashion them to our needs, and with slight initial cost, but no greater final cost, rear a structure that is pleasing to the eye, safe from fire, free from vermin, comfortable to live in, inexpensive for maintenance and repairs, and a lasting contribution to our national resources and wealth.

New York's Second Annual Architecture and Engineering Show.

New York's second annual Architecture and Engineering show will be held the first of March, 1912, and applications for space are already being received from this year's exhibitors as well as new people.

The success of the first show, despite its lateness of season, a condition caused by the wait for the completion of the New Grand Central Palace, leaves no room for doubt but that New York will now have a complete and representative annual exhibition of architectural, building and engineering supplies that will not be limited in its scope to this country, but will be international, as applications for space have already been received from London, England, Paris, France, and Milan, Italy.

Lumber, terra cotta, concrete, brick, marble, bronze and other interests that did not exhibit in this year's show, owing to the limited time for preparation, have declared their intention of having extensive and elaborate exhibits next year.

A special feature of the show hereafter will be architectural drawings, especially those of students and also model construction. Arrangements will be made to annually present the new inventions of the year in a special department. Interior decoration and landscape architecture will also be elaborately developed, and the conference of architectural and engineering interests will be held at the same time, but independent of the exhibition.

Full information can be had from A. D. V. Storey, general manager, 110 West Twenty-fourth street, New York City.

Municipal and State Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

A Practical Dirt Road.

HENRY S. LYON, in The Highway Improvement News.

ROAD overseers in their attempt to make their roads to appear first-class have forgotten the first essential part, a solid foundation. When you once have the foundation you can proceed to make a good road.

In making a good road, you must after getting the foundation, protect it from being flooded away by the large storms. To protect it from this, it is best to have the center of the road the highest and have a natural slope on each side, causing a ditch on each side, and then have underground culverts to carry the water across the road.

The best and most effective way of crowning the roads into this required shape is by means of a road scraper. Having put the roads in the shape explained above, take a heavy roller and go over it all with this, and then your road is thoroughly packed. It is best to scrape these roads in the spring before the last storm so that the rain will also help to settle the dirt.

In the mountain roads it costs considerable to put in all the necessary culverts. In the mountains every canyon, small and large, carries a large amount of water and also considerable trash during the heavy storms of the winter. To keep the culvert from washing out we must have round culverts, and corrugated iron meets all the requirements.

Let the motto for all road men to follow be this: "What you do, do well and permanently, regardless of cost."

Contractors Forfeit Bonds

Twice contractors have defaulted on their agreements to pave the streets of Lodi and the citizens of that city have reached a stage of guessing when they are to get the improvements. The work is expected to cost about $36,000.

The first bid for the work was awarded to the Barber Asphalt Company, supposed to be one of the largest concerns of the kind in America. However, this company failed to act, so its bond of $5000 was forfeited and new bids were called for by the trustees. The next contract was awarded to the Ransome-Crummey Company of San Francisco at $35,072, but that concern failed to sign the official contract Saturday night and its certified check for $5000 will be declared forfeited by the city trustees at the meeting tonight. The city will soon be in a position to pave the streets free of cost to the residents.

Street Names on Concrete Curbs

A number of methods are in use for placing street names in the sidewalk. In some cases the name has been cut in the top of the curbstone and the letters colored black. In cases where concrete is used for the sidewalk wooden pattern letters 1 inch deep have been bedded in the concrete. When the concrete has set sufficiently the letters are removed and the space filled with colored cement mortar or letters made of brass or composition metal. The city of Arkansas City, Kan., has adopted a system of marking the names of streets on top of the concrete curb, as shown in the accompanying sketch of one of the standard street corners. In this city a brass letter 3½ inches by 1½ inches is used to stamp the name of the street in the curb while the concrete is green. This has been found to give a legible and permanent street sign and has proven to be very satisfactory. Mr. J. H. Titus is the city engineer.

Good Roads Notes.

California will spend a great deal of money for good roads within the next two or three years. The State board issued calls for an outlay of $18,000,000; Los Angeles county, $3,500,000; San Joaquin county, $1,800,000; San Diego county $1,250,000. Many other counties are to vote on bond issues of $500,000 to $2,000,000.

* * *

It is doubtful whether Congress at an early time will look with favor upon national aid for road building which is done entirely within any one State. The best that the advocates of the measure can hope for is that interstate highway building may attract attention, and it will probably be found advantageous to concentrate efforts in that direction.

Nothing pays better than good roads. It costs something to secure them, but they are the arteries which connect city and country, along which the currents of comfort perpetually flow. Bad roads, full of chuck holes, kill time, team and temper.—Earle (Ark.) Enterprise.

* * *

The localities in the State where good roads have been built are becoming richer, more prosperous and more thickly settled, while those which do not possess transportation advantages are either at a standstill or are becoming poorer and more sparsely settled.—Wichita Falls (Tex.) Times.

Experiments With Oil in Concrete Road Construction

A progress report of experiments in dust prevention and road preservation, 1910, has been issued in circular form by the U. S. Department of Agriculture, Office of Public Roads, Logan Waller Page, director. The report includes experiments with oil mixed with cement and concrete, a process introduced by Mr. Page with such promise of success that he has gained wide distinction through his research in this field.

During the month of June, 1910, the office of public roads, in co-operation with the District of Columbia, conducted a series of experiments on Meridian place to determine the value of oil-cement-concrete as a road surface. Certain laboratory investigations had indicated that a mixture of Portland cement-concrete with residual petroleums might possibly be suitable for this purpose, and the experiments were therefore made for the purpose of trying such mixtures in a thoroughly practical manner.

The part of the street selected for this work runs from Center street east toward Fourteenth street, a distance of 356.1 ft. It is 19.5 ft. between gutters. The soil forming the subgrade is a coarse gravity red clay, which after a rain becomes sticky on the surface, but remains firm below. The grade here is light and slopes toward the west. The north curb is 6 in. lower than the south curb, because of the fact that the district constructs its cross streets on the same grade as the main streets running north and south. Meridian place is subjected to light traffic consisting of delivery wagons and pleasure vehicles. When the board of public roads assumed supervision of the work all grading had been completed and the curbs and gutters were in place. The cost data given in this report, therefore, includes the cost only from this point on.

The foundation of the road was constructed in two courses, the first of which consisted of from ½-in. to 1 ½-in. broken stone placed to a depth of 5 in. loose upon the prepared subgrade. After this course had been rolled until firm with a 12-ton 3-wheel roller, screenings ranging from ½-in. to dust were applied, and surface finished as in ordinary macadam road work. This method

Experiment No.	Section No.	Description	Length of section (feet)	Area of section (square yards)	Quantity of Material: Stone (cubic yards per square yard)	Screenings (cubic yds. per sq. yd.)	Sand (cubic yards per square yard)	Cement (cu. yds. per square yard)	Oil (gallons per square yard)
		OIL							
1	7	Fluid residual petroleum	65 8	142 6	0 063		0 027	0 015	0 534
2	6	Do	24 3	52 6	047		.024	018	640
3	5	Do	45 0	97.5	047	0 036		018	640
4	4	Do	37 0	80 2	047	024	012	018	960
5	3	Cut-back petroleum residue	68 0	147 3	047	.024	012	018	937
6	2	Do	72.4	156.9	047	.024	012	018	625
7	1	None	39 4	85 4	047	.024	012	018	

Experiment No.	Section No.	Description	Cost Data (cents per square yard): Stone at Mixer	Screenings at mixer	Sand at mixer	Cement at mixer	Oil at mixer	Mixing and laying Concrete	Foundation and miscellaneous	Total Cost: Cents (per sq. yd.)	Entire section
		OIL									
1	7	Fluid residual petroleum	15 75		6 75	14 18	4 01	24 20	52 52	117 41	$167 43
2	6	do	11 75		6 00	17.01	4.80	23 05	52 52	115.13	60 56
3	5	do	11 75	9 00		17.01	4 80	23 05	52 52	118 13	115.18
4	4	do	11 75	6 00	3.00	17.01	7 20	23 05	52 52	120.53	96 67
5	3	Cut-back petroleum residue	11 75	6.00	3 00	17 01	12 18	23 05	52 52	125 51	184.88
6	2	do	11 75	6.00	3 00	17.01	8 13	23 05	52 52	121 46	190.57
7	1	None	11 75	6 00	3 00	17 01		23 05	52 52	113.33	96 78

of construction was followed in the preparation of the foundation for all of the experiments.

Common labor for this work cost $1.50 per 8-hour day; foreman, $4; double teams, $4; a 5-ton tandem roller, $8; the 3-wheel roller, $12; and a "bug" concrete mixer, $4 per day. Stone and sand cost $2.50 per cubic yard delivered on the work. The oils and cement were donated, but their cost, including freight, is given in the cost data.

The bulletin gives methods of construction in detail, embracing seven experiments. It was found that the concrete could be handled best when made sufficiently wet for the mortar to flush to the surface upon tamping, but not so wet that it would not hold its shape after being tamped.

The oil experiments were made with fluid residual petroleum and cut-back petroleum residue. Different methods and aggregates were used. For example in the first experiment a stiff mortar of 1 part cement to 2 parts sand with oil to the amount of 10 per cent by weight of the cement was used while in the second experiment the same oil was used with a concrete composed of 1 ½:2:4 of cement, sand and broken stone, the stone, a crushed trap, ranging from 1 ½ to ¼ in diameter.

The best surface finish was obtained by troweling the wet concrete with the back of a flat No. 2 shovel until smooth and uniform. All sections were closed to traffic for at least seven days after being laid and were sprinkled with water daily during that period. On one section a thin layer of sand was spread over the surface and on another a thin layer of stone screenings ranging from ¼ in. to dust. All the sections were in excellent condition when inspected on January 31. The materials and cost data for the experiments are given in the table at the foot of page 105.

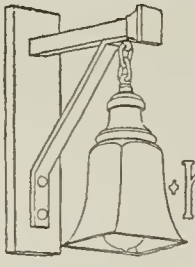
HEATING AND LIGHTING

Plumbing and Electrical Work

Plumbing Work in Building Construction

THERE are many points about plumbing installation that the owner of a building ought to know and some of these are touched upon in the following comments taken from a recent issue of the Record and Guide: The element of plumbing in building construction is one of the most difficult with which owners, architects and builders have to contend. Cost is often a barrier against a thoroughly scientific installation with high-class piping connections and fixtures. The result is that defective plumbing sometimes goes, and the owner finds it a constant source of expense for repairs. Such plumbing is not uncommon in speculative apartment houses, and physicians say it is a direct cause of sickness, especially diphtheria, scarlet fever and throat affections.

The plumbing work of a building is divided into two parts, the outside and the inside. In the first part are the roof work and the conduits leading from waste pipes of closets, bathrooms and sinks; ridges, hip rafters and valley gutters. Proper supervision is here necessary to guarantee perfect junctions at the overlaps of zinc, iron, tin or lead, for upon this depends the prevention of leaks which are frequently costly in the extreme, through causing decay of steel or wooden supports.



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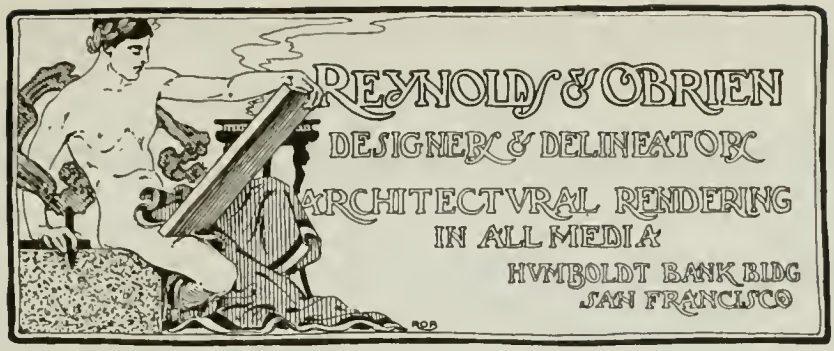

Certain parts of a roof are exposed to greater stress of storms than others. Here reinforcements are necessary. Danger is also present from snow slides, which, if combined with sleet or particles of ice, will rip shingles or tiles from their fastenings. Where straps are soldered onto the tin roof or bolted on the slate shingles, care must be taken that the connections are made water tight.

Another valuable point for prospective builders to remember is to have all soil and waste erected from the outside walls of the building. Water closets should be arranged so that they are against a back or interior wall, and the branch soil pipe should be carried through the wall and inserted into a branch horn cast on the upright soil pipe and jointed firmly with red lead and rope yarn.

It is now customary for the plumber to make a test of the system before the walls are enclosed. These are called the smoke and peppermint tests. If the owner wishes to have this done by a disinterested party, there are companies that make a specialty of this kind of work and their reports are generally reliable. Some of them have a contract system which enables the owner constantly to keep his plumbing under surveillance.

At the offices of the city's water department are exhibits of plumbing work taken from buildings. They are worthy of study. One of them is a "wiped joint" that was evidently the work of an amateur, and this leaky piece of work caused a loss of millions of gallons of water before it was discovered.

The economy of installing good plumbing cannot be emphasized too strongly. In this age of electricity, electrolysis is an ever present menace to all service metal. The average owner thinks that this condition prevails only where pipes are buried in the earth, but it has been known to eat away water pipes many feet above the street level. Asphaltum and damp-proofing coatings are on the market which prevent dampness and electricity from reaching the pipes. There are also many other devices for preventing this destroying agency from operating. The water department exhibit includes samples of iron pipes that have been so eaten by these stray currents that they resemble pieces of wood pierced by worms.

Owners sometimes blame lack of water pressure upon defective plumbing when it is really due to "pipe tuberculosis." As a general rule, lack of pressure is due to one or two things: a series of leaks or "pipe tuberculosis." This is a form of interior rust and deposits which form on cheap pipe until they almost entirely close the water spaces. The only remedy for this is new piping.

Interior plumbing is usually of a better grade than that officially designated as the "rough work," but beneath the nickel plating inferior grades of material are sometimes used. The almost universal practice today is to install exposed plumbing and heating conduits, but even in this the owner or his superintendent of construction has need for great care if he expects to get full value for the money he spends on his plumbing system.

Heating Concrete Buildings

As to the relation between the material used in construction and the heating of the building, experience seems to show that with concrete floors it takes a greater time to heat up the building for

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the first time than in the case of wood floors. However, after the building has once become heated it requires much less heat to maintain a good even temperature than in the case of mill construction, so that the maintenance of heat in the long run appears to be considerably cheaper with concrete than with mill construction. Where the heating bill is of considerable magnitude this feature might very properly be seriously considered in connection with the choice of building material. L. C. Wason, of the Aberthaw Construction Company, in discussing this before the last convention of the N. A. C. U., suggested that this point could be employed to good advantage.

Now It's An Electric Refrigerator.

Many large apartments and hotels maintain private ice plants, or refrigerators, which amount to the same thing. A small motor circulates the brine and ammonia gas, and the temperature of the refrigerator is controlled automatically.

The new refrigerator is operated by electricity. In place of ice a "cooling liquid" is circulated by a small motor-driven pump. The scheme for keeping the refrigerator cool is the same as is used to make artificial ice. With the motor-driven pump ammonia gas is compressed to the point at which the gas liquifies (for pure ammonia is gas) and the heat generated by this compression is extracted with water jackets. This liquified gas is conducted to the cooler through a pipe and allowed to expand in a coil. Of course as the gas expands it absorbs just as much heat from its surroundings as was generated in compressing it. This lowers the temperature of the interior nearly to the freezing point. From the expansion coil the gas is conducted back to the compressor ready for another cycle.

The beauty of the electric refrigerator is that it works absolutely automatically and with the perfection of economy. When the temperature in the "ice box" rises above a certain point a tiny electric device starts the electric motor which circulates the cooling liquid. As soon as the temperature drops to the desired point the same device, called a thermostat, stops the motor. The automatic device controls the apparatus indefinitely and there is no waste of electric power. So simple is the new refrigerator that it requires practically no attention except an ocasional oiling of the electric motor and the compressor.

In many cases the amount formerly spent for ice would pay for the new refrigerator and the amount saved by keeping vegetables, meat, milk and other things in the ice box will more than compensate for the cost of keeping a private ice plant.

The iceless ice box has been successfully used for some time in hotels, meat markets, fruit stores, creameries and in wholesale and retail houses where perishable goods are handled. Now it is to be made in sizes suitable for the home.—Electric News Service.

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Curious Results of Painting Radiators.

ARCHITECTS when providing for heating will note with interest some remarks made recently by Prof. R. Allen at the Pittsburg meeting of the National District Heating Association. The radiators were all of the steam-heated type, and the coefficient of heat-transmission per square foot per degree difference between the temperatures of the steam and air was determined by measuring the amount of condensation in the radiator. The coefficient varied somewhat according to the arrangement of the radiator. A number of radiator pipes side by side naturally reduced the rate of loss of heat both by radiation and convection. For ordinary conditions the coefficient, as defined above, varied between 1.5 and 2 B. Th. U. This coefficient slightly increased as the temperature difference increased, due no doubt to the proportionately reduced influence of the resistance of the radiator metal. The humidity of the atmosphere had a slight effect, moist air reducing the rate of transmission. Some rather curious results were obtained by painting the radiators. The several coats of paint were mostly applied over each other, and the results showed that the quality of the surface was the important fatcor. Enamels and varnishes gave results equal to uncovered pipes, whereas the bronzes reduced the rate up to 25 per cent. In rooms with extra glass walls or cold surfaces the coefficient was increased, due no doubt to the greater radiation, and probably also the more active circulation of the convection currents.

Employers Liability Act.

Under the Authority of the Employers Liability Act of the last legislature which became effective September 1, the governor of California has named the members of the Industrial Accident board of three, the yearly salary of each being $3600. A. J. Pillsbury, formerly secretary of the State board of examiners, editor and well known writer of San Francisco; W. J. French, editor of the San Francisco Labor Clarion, labor leader and prominent in civic affairs, and W. J. Morrison, an attorney, practicing in Los Angeles, are the men named by the governor.

Residence and Bungalow.

Architect Charles Ed. Hodges, 678 Monadnock building, San Francisco, and Palo Alto, has let a contract to Currie & Currie of San Francisco, for the construction of a residence and garage for Major Phillip G. Wales, U. S. A., on the Drexler tract, at Fair Oaks. This will be a handsome addition to the many fine residences in this locality. The contract price is $13,314.

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Claim Lime Stone Dust Ruins Orange Trees

The cement manufacturers of the Pacific Coast are awaiting with interest the result of the appeal of the California-Portland Cement Company against the decision of the Superior Court of San Bernardino county in favor of the orange growers of that district, ordering the cement company to discontinue its manufacturing, because it was shown that the lime stone dust issuing from the tall chimneys damaged the orange trees for miles around. As there are other manufacturers of cement in this State that are liable for the same cause, they are awaiting the result of this appeal with more than passing interest.

The California-Portland Cement Company is owned by Los Angeles capitalists and bankers, and up to the time of this injunction was one of the largest manufacturers of cement in Southern California, and played an important part in determining the price of cement in the Los Angeles market. The chief works of the California-Portland Cement Company are located near Colton, which is the heart of the Southern California orange district, and thus it has resolved into a battle between two giant industries.

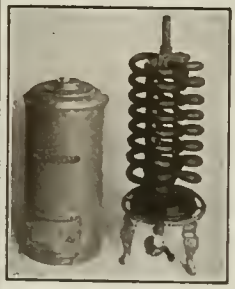
The appeal was heard by the Supreme Court in San Francisco on September 5th and an early decision is expected by both sides.

Tunnel for Fillmore Street

At the last meeting of the Fillmore Street Improvement Association of San Francisco, completed plans for the Fillmore street tunnel were presented by the committee and the engineer, A. B. Southard, which were unanimously approved by the association.

The most interesting features of the tunnel as it is planned will be the entrance at Sutter and Fillmore streets. The committee and engineer working on the project saw that if the street between Sutter and Bush streets in Fillmore were graded it would leave the buildings at the Bush street end of the block standing on the edge of a 32 foot precipice, so they have decided to buy land back of the present buildings and set the stores and houses back 35 feet on each side, that the surface lines may run up one side and down the other and still leave ample room for a sidewalk and for teams.

According to the plans the tunnel will be 13 blocks long, reaching from Sutter street to Filbert. All the work will be done from the north end, so that at no time will there be a blockade of traffic. It will cost $2,000,000 and about two years will be required to complete it.



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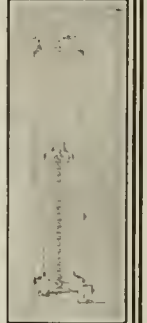

Museum and Art Gallery.

A movement has been started to erect a permanent museum and art gallery of monumental proportions on the site of the Mark Hopkins Institute of Art on the summit of Nob hill, in San Francisco. The sponsors of the project would make it a fitting monument to commemorate the Panama-Pacific exposition. The Home Industry League has lent its approval to the plan. The proposed structure is to be built entirely of California materials, and the estimated cost is $1,500,000. The plans are by Architect Henry C. Smith.

It is proposed that a building of four stories be constructed on the southern portion of this block, 125 feet in Mason by 175 feet in Pine street, the two lower stories to constitute an assembly hall and gallery for the purpose of art lectures and the like. This hall will have a capacity of 5,000 persons.

The third story is to be used for exhibition purposes or for instruction rooms for such art schools as may exist or be established, and the two upper stories, being perfectly lighted for the purpose to be devoted to a permanent art gallery.

The great advantage of an art building of this character would be its accessibility to the city and the fact that the entire structure would be absolutely fireproof.

It is proposed that the main or monumental building shall cover an area of 150 feet in Mason street by 175 in California street, on the northern portion of this lot. It would then be immediately across the street from the Fairmont hotel.

The proposed building has a height of 425 feet. The materials used are to be California marble and granite, the interior finish of California marble and onyx. All the materials are to be the product of the quarries of California and the building will be composed entirely of steel, stone and glass.

The Home Industry League will inaugurate a campaign to raise the necessary money for the building and will enlist the aid of the State authorities.

Pearl Harbor Building.

Bids are being called for by the quartermaster of the Marine Corps, Washington, D. C., for the construction of one barrack building, one commanding officer's quarters and two double sets of junior officers' quarters at the U. S. naval station, Pearl Harbor, Hawaii. The buildings are to be reinforced concrete construction walls, footings, columns, beams, floors and roofs. All structures are to be two stories high. Interior floors generally in officers' quarters are rift pine. Floors elsewhere generally cement. Roof of barrack building to be flat vitrified tile; roof of officers' quarters to be slag, felt and pitch. Interior trim and doors, etc., generally, is Ore-

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gon pine or Washington fir. The site for the buildings will have to be cleared by the contractor of trees, stumps, roots, etc.

The plumbing schedule calls for a total of 178 fixtures.

The kitchen equipment is to consist of general cooking apparatus, including boilers and stands, cook's work table, pot sink, kitchen work tables, peeling machine, range, range shelf, soup kettles, vegetable steamers, coffee and water urns, vapor pipes, canopy, saucepan racks, vegetable sinks.

The specifications for necessary electric wiring and lighting fixtures.

In the commanding officers' quarters there is to be a total of 22 plumbing fixtures.

In addition to the formal proposal for the various classes of work, alternate proposals for the different buildings are required.

The bids are to be opened in Washington on December 4, 1911.

San Jose Y. M. C. A. Building

Architect William Binder of San Jose has been selected to design the new $100 000 Y. M. C. A. building to be erected in the garden city and for which funds have already been raised. The structure will be Class A and four stories in height.

Ex-Mayor Phelan to Build

Former Mayor James D. Phelan of San Francisco, will build a handsome country villa, Italian style, in the Los Gatos foothills. Architects William Curlett & Sons are preparing the plans.

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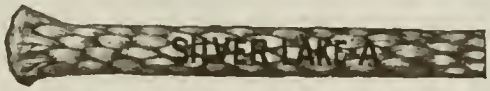

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By the Way

Some Industrial Information Worth the While

Van Emon Elevator Company

The Van Emon Elevator Company has recently made some important changes in the personnel of its staff which promise to strengthen the corporation very materially. It may be stated that the company is stronger financially than it has ever been. B. C. Van Emon is no longer connected with the corporation in any capacity. R. J. Davis is the president and general manager and the business has shown marked improvement since he assumed control of affairs.

Mr. Davis recently returned from the Northwest where he has reorganized the company's branch offices at Seattle and Portland. At Vancouver the Canadian Van Emon Elevator Company has been incorporated with J. H. Collis, vice-president and E. C. Ekstromer, treasurer and manager. Offices have been opened in the Pacific building and one of the first contracts to be taken under the new regime was an installation of high speed electric passenger elevators in the Columbia hotel, Honeyman and Curtis, architects. The Canadian Company has also taken a contract for a hotel for W. C. Marshall at Vancouver, Hugh Braunton, architect, and the Lim Bang hotel and the stores of the David Spencer Company, Ltd., at Victoria.

E. C. Ekstromer, E. E. and M. E., who is the vice-president and treasurer of the Canadian company, will have his headquarters at 1309 Arcade Way, Seattle, acting also as Northwest manager of the San Francisco company. The Portland office is at 205 Rothchild building and is in charge of George A. Russell as manager for the State of Oregon. One of the finest elevator installations in Portland is to be found in the Commercial Club building, where Van Emon high duty cars equipped with new controllers are in operation.

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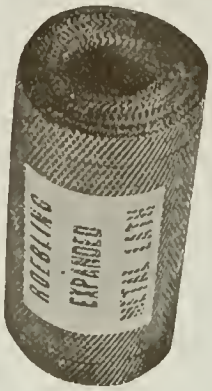
Recent contracts taken in San Francisco and vicinity by the Van Emon company are the O'Sullivan Estate building, Houghton Sawyer, architect; Butler Estate building, Reid Bros, architects; Wellman Estate building, Julius Krafft & Son, architects; Charles Warren Welsh estate building, N. W. Sexton, architect; Grace S. Hall building, William H. Weeks, architect, hydraulic elevator for the Varsity creamery at Berkeley and a large freight elevator with a capacity of 10,000 pounds, for the Western Pacific railroad company at Sacramento.

Waterproofing for Two Big Municipal Buildings

The concrete work in San Francisco's temporary city hall has been practically finished by Keatinge & Son and they have done a good job in record time. The structure looms up well and when finished will be an ornament to the upper Market street section of the city. It is of interest to note that the John L. Fox Waterproofing Compound has been used in this as well as other substantial San Francisco structures, including the new Olympic Club, from plans by Architects Paff and Bauer. The new Oakland city hall will also be waterproofed by Mr. Fox.

THE ROEBLING CONSTRUCTION Co.'s



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"Closed Shop" Works Harm

While it has always been generally regretted that the "closed shop" principles of San Francisco should alter and hamper many of the specifications called for on buildings, resulting often in inferior materials being used, and unfair advantage being taken in the sale of goods, up to the present time no remedy for seemingly unjust interference seems to have been discovered.

One particular case where competition has been stifled by the refusal of many branches of union affiliations to allow the goods to be installed in this city, is that of the Llewllyn Iron Works of Los Angeles, who, through the advantages of their "open shop," are manufacturing a reasonably priced and efficient elevator, with the result that they are readily specified in not only the Southern part of California but also in Portland and Seattle, but up to the present time only one of them has been installed in San Francisco, and this was done only after great difficulty had been experienced due to the objection of the different union bodies working on the building.

While this is exceedingly hard on the manufacturers, it is equally as hard on the owner who has the right of a free citizen to spend his money where he sees fit, besides receiving the article he desires, and deems best; while the architect should have the same privilege of specifying the material that his judgment calls for, regardless of the fact of its bearing the union label or not.

Monument to Columbus

The San Francisco School of Technical Design ("Italiae Polytechnicum"), through the medium of its director, Prof. C. O. Sbrana, heading a list with a contribution of one hundred dollars, has instituted a general public subscription known as the "Columbus Monumental Fund" for the erection in Golden Gate or Lincoln Park, of an imposing monument in perpetual veneration of Christopher Columbus.

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Reports and Estimates on Properties and Processes

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These two admirable products will be incorporated under our supervision with the full benefit of our joint experience.

The Blanc Stainless Cement Company's works are in Allentown, Pa., where this waterproofed cement will be produced under the special supervision of our technical and research departments.

Our distributing agencies in all the principal cities of the U. S. and Canada for the sale of our White Portland Cement—"Blanc"—will be very pleased to furnish prices or other information you may desire, but for technical information we would request you to address our home office.

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Building Material Firm Branches Out

One of the latest building material houses to branch out and seek business outside its native town is the firm of Kavanaugh & Rosenburg of Hayward. In business for the past seven years, the firm has prospered and in broadening its field it proposes to carry out the same principles that contributed largely to its success in Hayward and immediate vicinity, namely, prompt service and fair dealings with all its customers, whether large or small.

Branch offices have been established in the Pacific building in San Francisco and in the Commercial building in Oakland. All kinds of building material are handled, including cement, lime, rock, sand and gravel, brick and lumber. Particular attention will be paid orders in the Bay cities and towns, the firm's territory extending as far north as Sacramento and as far south as Fresno.

Contract for Willows City Hall

Graham & Jensen, contractors of Willows and Merced, have been awarded the contract for the erection of the city hall at Willows, from plans by Architect Russell of San Francisco. They will do the work for $24,900, which was the third highest bid.

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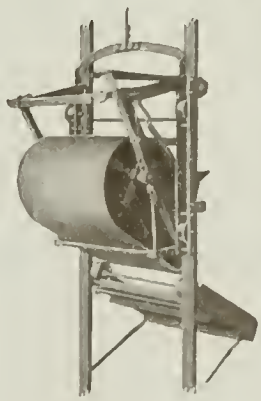

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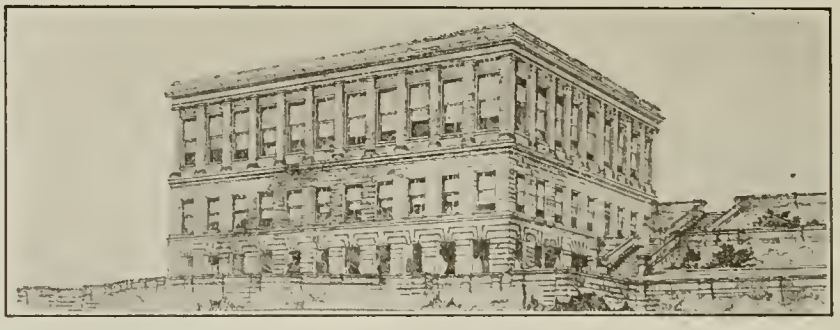

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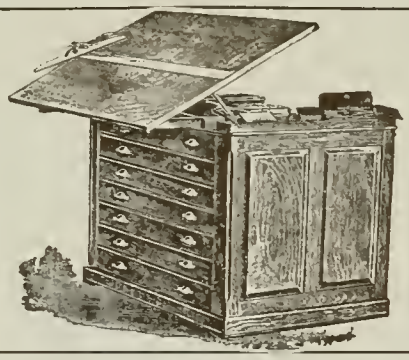

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When you talk of using gas grates for heating purposes the thought invariably enters your mind: "But they don't heat well. They eat up all the oxygen in the room and when you turn the burner off, the room becomes cold and damp almost immediately." Just so with the ordinary gas grate but not so with the pure air logs and gas burners manufactured and sold on the Pacific Coast by the McGeorge & Cooper Manufacturing Company. This company has its own factory in Oakland, while its main office is in the Sheldon building in San Francisco. The burners are on exhibition at the show rooms of the Metropolitan Light and Power Company, 424 Sutter street, San Francisco, and 16 Geary Street (Room 10), also at the Oakland Gas Light and Heat Company's Oakland, Alameda and Berkeley offices. It is claimed that there is absolutely no odor or moisture about the McGeorge & Cooper grates, Some exceptional testimonials have been given by architects, physicians and others. The following are examples:

San Francisco, June 14, 1910.

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Gentlemen: After a thorough test of your Pure Air Gas Burner and Log I am satisfied it is the most perfect system of heating by gas on the market. I could not detect the least odor of gases, and it is absolutely free from moisture and sweating, so common in all other gas grates, and am pleased to specify them in all work where gas grates are required.

Albert Farr.

San Francisco, May 18, 1910.

Messrs. McGeorge & Cooper,

16 Geary Street, San Francisco,

Gentlemen: The Pure Air Gas Logs and Burners installed in my residence, 2751 Clay Street, has proven satisfactory in every respect. There is absolutely no odor or moisture, and a great saving of gas for amount of heat. Your gas logs were to replace two gas grates of Eastern manufacture, which I found impossible to use on account of their noxious fumes and sweating.

J. Steinhart.

San Francisco, Cal., June 16, 1910.

Messrs. McGeorge & Cooper,

16 Geary Street, San Francisco,

Gentlemen: In reply to your request for my opinion on your Pure Air Gas Logs, I take pleasure in stating that I am well pleased with the results obtained and consider them the best of any that I have ever used. I find them attractive in appearance, efficient and entirely free from the odor of unconsumed gas.

Yours very truly,

C. O. Clausen, Architect.

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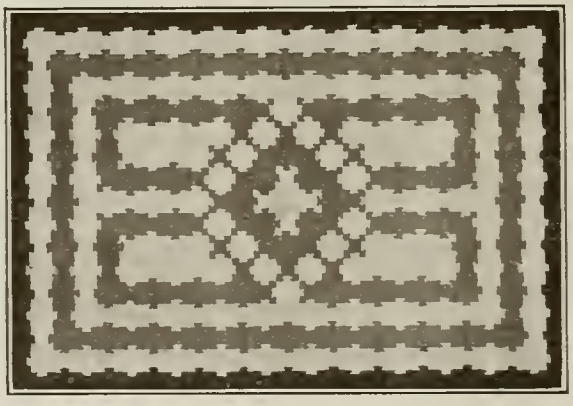

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Ceresit Waterproofing.

The Ceresit Waterproofing Company, which is represented on the Coast by Parrott & Company, have just issued an attractive pamphlet calling attention to some of the many important structures in this country and abroad that have been waterproofed with Ceresit. The cover bears a unique design indicating that Ceresit won the grand prize at the recent Brussels exposition, also five gold medals at the 1909 World's fair. Among the illustrations is a cut showing the Ceresit water pavilion at the Brussels exposition. The pavilion is constructed of concrete 4 1-2 inches thick and the waterproofing is accomplished by incorporating Ceresit in a cement mortar coat three-quarters of an inch thick and applied to the outside of the concrete walls. A giant fountain throws 15,000 gallons of water per hour over this pavilion.

Ceresit is manufactured in Chicago, and sold at a comparatively low price.

It is a cream white paste of about the consistency of butter. In use the paste is simply added to the water used in mixing mortar or concrete. Ceresit penetrates with the water to all parts of the concrete or mortar and assures a permanent water and damp-proof job.

For structures of any material—brick, stone, concrete or tile—a coating of cement mortar waterproofed with Ceresit will render them thoroughly water and damp-proof.

When new structures are to be built of concrete they may be made waterproof throughout without necessity for any extra coating by using Ceresit in the water with which the concrete is mixed, thus rendering the entire structure water and damp-proof throughout its entire mass.

Supplied Seats for Los Angeles Orpheum Theatre.

The seating in the new Orpheum theatre, Los Angeles, the recent opening of which was so generally attended, is cited as an example of the latest improvements and developments in the use of opera chairs to round out the architectural spirit of a theatre and to harmonize in details with the order of architecture employed.

The development in theatre seating has been steady, and highly paid experts are constantly at work to keep the improvements in opera chairs on a par with the improvements which are so constantly made in other kinds of furniture.

The chairs in the Los Angeles Orpheum were installed by C. F. Weber & Co., who are congratulating themselves on the comfortable fit and harmonious appearance of the chairs. They are frequently exhibiting new styles of theatre chairs at their show rooms, 512 South Broadway, Los Angeles, and 365-367 Market street, San Francisco, Cal.

About the Rabbitt Fire and Vermin Proof Partition.

H. G. Clinton, of 34 Ellis street, San Francisco, who represents the Rabbitt Fire and Vermin Proof Partition, has the following to say regarding its merits:

It is a solid partition 2¼ inches thick, made of wood and hardwall plaster, or wood and lime mortar with 1-5 cement. The plaster or cement entirely surrounds the wood, preventing combustion by keeping the air or oxygen away from the wood. Rabbitt partitions have stood without injury either by fire or water, in fires that drew the plaster from adjoining brick walls, also in fires that cracked channel iron partitions and again in fires that burned the metal lath and plaster from hollow steel partitions.

Underwriters failing to injure it with fire or water, give it the rating of channel iron.

Building Inspectors' Departments specify it as fireproof construction, and call it superior to channel iron.

Architects say it is combustible and the best fireproof partition on the market, being also smoke and sound proof and very rigid.

Owners say no one should build without first examining the merits of the Rabbitt fireproof partition.

Especially in buildings that are not otherwise fireproof this partition should be used, such as frame school houses, hospitals and dwellings with sleeping rooms, above the first floor, as fires cannot get to upper floors through this partition.

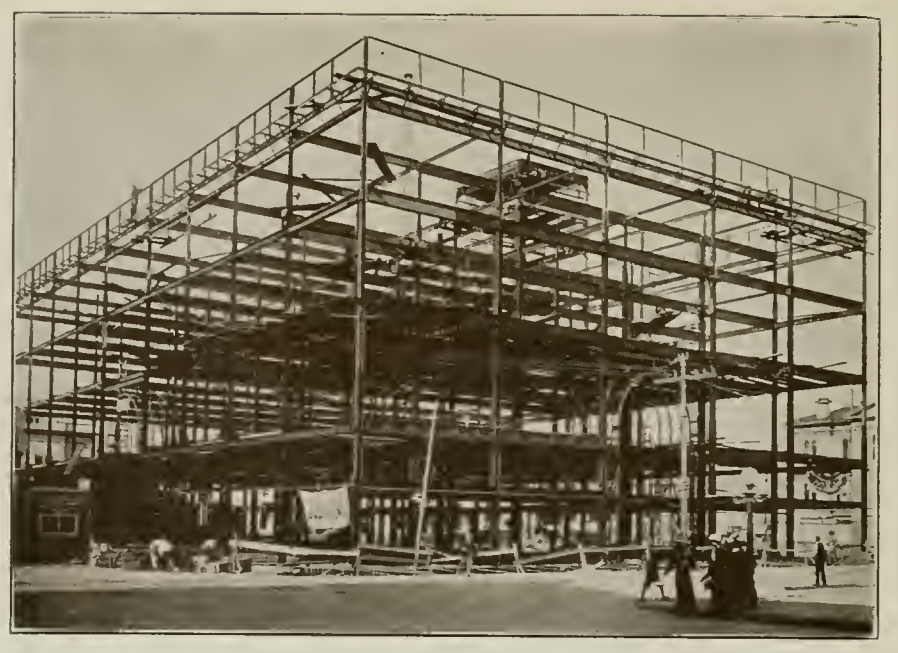
Stairways, elevator shafts and light wells create a draft that spreads fires, and also prevent occupants getting down. If these openings were encased with Rabbitt partitions they could not burn, even if soaked with coal oil.

In all frame buildings where there are many persons, as in factories, hospitals, schoolhouses, etc., there should be some absolutely fireproof partitions to check the spread of fire, the ordinary partitions add so much fuel, and help to carry the fire from floor to floor.

Rabbitt partitions are especially valuable in kitchens and bathrooms, and in hotels and apartments, as bugs, mice or rats cannot breed in it or get into or through it.

It is in use in many office buildings as a space saver, as four partitions only take ten inches, in place of twenty-three inches, as hollow stud partitions do, and on business property where land is valuable, it means saving money.

Yet with all these good points, the Rabbitt partition costs little, if any more than the cheapest flimsiest 2 x 4 firetrap constructions.



Steel Frame of Capwell Department Store Building, Oakland, California
C. W. Dickey, Architect

The Judson Manufacturing Company a Home Industry

IF any one has any doubt as to the Judson Manufacturing Company's facilities for turning out large orders of structural steel, cast iron and reinforcing bars, he should visit the company's big plant in Emeryville, Oakland. Here he will find a plant second to none on the Coast, employing more than 500 skilled mechanics, and occupying a series of buildings that cover several city blocks. Equipped with the most modern machinery and enjoying the best of railroad and water transportation facilities, the Judson Company is in a position to take care of any order in its line and guarantee the customer a satisfactory product and prompt delivery.

Just now the company is busy filling one of the large structural steel contracts ever awarded to a Coast manufactory—the steel for the new Oakland city hall. There will be something more than 35,000 tons in the building. This steel will be shipped here from the east for fabrication in the local yards.

The same company supplied the structural steel for the Capwell department store building in Oakland, a photograph of which accompanies this article. This building is four stories and as will be seen by glancing at the picture, the steel is of an exceptionally heavy character and is made sufficiently strong to carry additional stories if it is deemed expedient to add them later on. The total tonnage is about 850 tons for the job.

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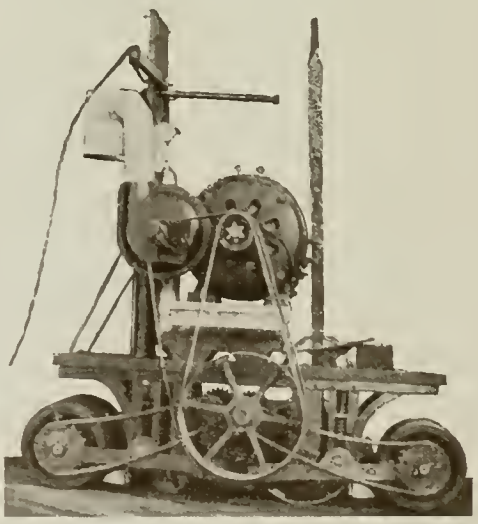

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The Judson Iron Works is 28 years old and was established by the man whose name it still bears. For a number of years H. E. Bothin has been the guiding spirit and he has been ably assisted by a corps of well known men who are familiar with the steel and iron industry.

Since reinforced concrete became so popular the company has specialized in reinforcing materials. Both plain and twisted steel and iron bars are manufactured in sizes varying from three-eighths of an inch to one and one-fourth inches round and 30 feet long. Shipments are made to any point on the Coast.

An Opportunity to Buy Wood Cheap

The winter season is close at hand and it is time to stock up with fuel for the fireplace and stove. There is no better wood for the open grate than eucalyptus which is sold by most of the dealers in San Francisco and vicinity for $15 a cord. Mr. Locke of The Locke Foundation Company, Crocker building, San Francisco, has about 600 cords of this wood on hand and to get it off his hands quickly will sell it for $10.50 per cord. This means cut and delivered to any point within 50 miles of San Francisco. The wood at present is in four foot lengths but will be cut any size without additional charge.

Inspector of Public Works

Eugene B. Cushing has been appointed Inspector of Public Works of Los Angeles, with a salary of $3600 per year. Mr. Cushing will have general supervision of all public work such as the board of public works may direct, including street work, garbage collection, etc. During the last two years, in which he has been a resident of Los Angeles, Mr. Cushing has been a silent partner in the real estate firm of Edw. D. Silent & Co. Previously Mr. Cushing had extensive experience in street improvement work, and was for three years general manager of the Independent Asphalt Association of New York.

Steel Arch for Modesto

The competitive design of Architect Bernard Joseph, First National Bank building, San Francisco, for a structural steel arch for Modesto, has been accepted by the Business Men's Association of that city, and as soon as working drawings are completed a contract will be let for furnishing and erecting the arch. The structure will rest on two massive brick piers finished to represent stone. The style of architecture is French renaissance and the cost is estimated at $1,825.

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Robert W. Hunt Made America's First Steel Rails.

The following article complimentary to the Robert W. Hunt Company, chemists and inspectors of structural materials, with branch offices in all the leading cities, is from the Commercial Chronicle of Chicago. Mr. Hunt, by the way, will be in San Francisco in October to attend the annual convention of the "American Institution of Mining Engineers":

Eminent in many departments of industry, absolutely pre-eminent in others, Chicago's dominance still continues to expand. For years no question has been raised as to its centrality in the manufacture of palace cars and harvesting machinery, and its mercantile retail and wholesale establishment vie with Packingtown and its extensive plants as cardinal factors in the city's supremacy.

In Robert W. Hunt & Company, however, Chicago finds itself possessed of an institution which holds sway over a field Chicago has not been accustomed to command.

The business of Robert W. Hunt & Company is the inspection of railway materials, such as rails, cars, engines and the like. Practically every American railway is a patron of the company, and it has been said that the Hunt corps of experts inspects over 75 per cent of the rails purchased by these corporations.

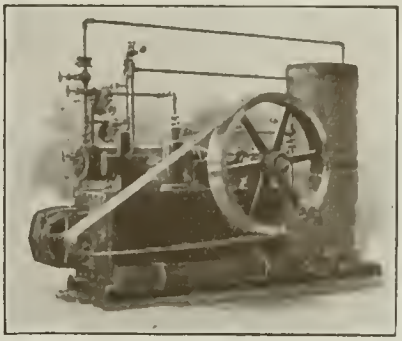
The company also makes a specialty of testing engines and boilers, particularly in city waterworks, and at one time or another has been retained for this purpose by the cities of Chicago, St. Paul and Buffalo.

Equally significant is the importance this concern has come to have in the money market. Its reports on industrial propositions are often sought, and so accurate is the work of the Hunt forces that these reports are always accepted without question as a basis for reorganizations or issues of bonds.

In the export trade Robert W. Hunt & Company have a fixed place and have come to be indispensable aids to foreign purchasers in the American steel and machinery market. In supervising the proper filling of these contracts, which cover engines, bridges, cars and railway materials, the name of the Hunt company has come to be as well known abroad as at home.

The company's laboratories also offer the best facilities for the assay of ores, the analysis of metals, paints, oils and the like, and for the physical testing of all materials.

Such an immensity in operation necessarily implies the existence of some master mind, of which the present organization is the master work. The man in this case is Robert W. Hunt himself. His personal career is a long succession of triumphs in American metallurgy, and



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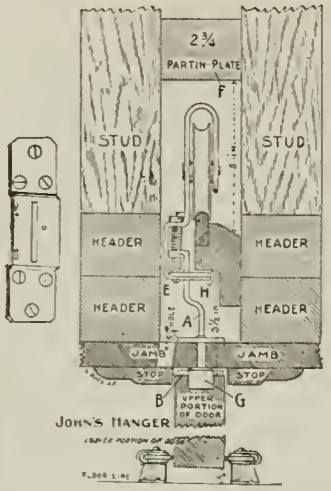

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probably no man in the world today is better qualified to talk steel to steel men, or engineering to engineers, than this man who directed the manufacture of the first commercially rolled steel rails in the United States.

Mr. Hunt's affiliations extend abroad, American Institute of Mining Engineers, the American Society of Mechanical Engineers, and the Western Society of Engineers. He is also a member of the American Society of Civil Engineers, and was the secretary of that society's committee when it designed and recommended the rail sections long standard among United States railways.

Mr. Hunt's affiliations extend abroad, and he is a member of the Institution of Civil Engineers of England, the Institution of Mechanical Engineers of England, and the Iron & Steel Institute of England.

Born in Pennsylvania, Robert W. Hunt first entered the industry in a practical way in the rolling mills at Pottsville, where he learned puddling, heating, rolling and other basic principles. Later he studied analytical chemistry in Philadelphia. At the outbreak of the Civil War he enlisted in the Pennsylvania volunteers and became captain in command of Camp Curtin at Harrisburg.

At the close of the war he came west as superintendent of the Cambria Iron Works' experimental Bessemer steel plant at Wyandotte, Mich., thus forming a connection with the development of Bessemer steel from the very outset. This Wyandotte plant was the first Bessemer steel plant in America. In 1866 Mr. Hunt returned to the works of the Cambria Iron Company at Johnstown, Pa., where he remained for seven years. For the next fifteen years he was associated with John A. Griswold & Company, and their succeeding corporation, the Troy Steel & Iron Company, at Troy, N. Y.

In 1888 Mr. Hunt organized Robert W. Hunt & Company, having at present as his colleagues John J. Cone, James C. Hallsted and D. W. McNaugher. It may be interesting to know that the Hunt specifications for steel rails are still the basis upon which the various accepted specifications are based.

In view of the career of Robert W. Hunt and of the company which he has created Chicago finds itself possessed of a pioneer institution whose eminence ushers the city into leadership in an important national field. With the launching of Gary and the general concentrating of industrial lines in the West, the significance of this is boundless.

White Brothers New Stock List.

White Brothers, the pioneer hardwood lumber house of this city, have just issued their semi-annual stock list. This list shows the amounts of each kind of lumber dry and on stick at their yards at San Francisco, and their sawmill at Petaluma.

The list is remarkable, inasmuch as it represents the largest stock of general hardwoods West of Chicago. The variety of woods is greater than that carried by any hardwood dealer outside of New York, and covers the entire field of hardwood. The requirements of the Pacific Coast market call for at least one complete stock of hardwoods and White Brothers are recognized from Cape Nome to Panama as the headquarters for anything in that line.

White Brothers' stock list is interspersed with cuts showing exterior and interior views of their building, etc., and the latter half of the book is given up to a list of sizes and prices of the well known "Wybro Brand" veneered panels, of which make White Brothers are the Pacific Coast distributors.

Personal

Architect S. B. Zimmer, for several years located at El Centro, has moved to San Diego, where his address is 3548 First street. Mr. Zimmer was a well-known architect in Oakland before seeking a climate in the Imperial Valley more favorable to his health.

William Mooser, president of the San Francisco chapter of the American Institute of Architects, has returned from a two months' trip abroad.

Architect B. J. S. Cahill who has spent the better part of the past eighteen months in Portland, Oregon, where he was associated with Architect Gibson in the construction of a large hotel, has been renewing acquaintances in San Francisco the past month. Mr. Cahill expects to return to Portland shortly to open an office under the firm name of Wright, Rushforth and Cahill, who also maintain offices in San Francisco and in Vancouver, Wash.

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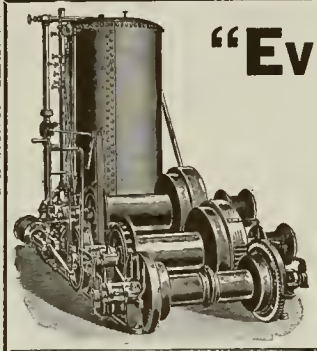

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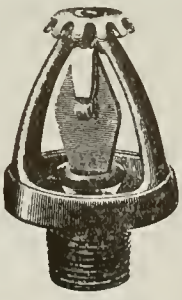

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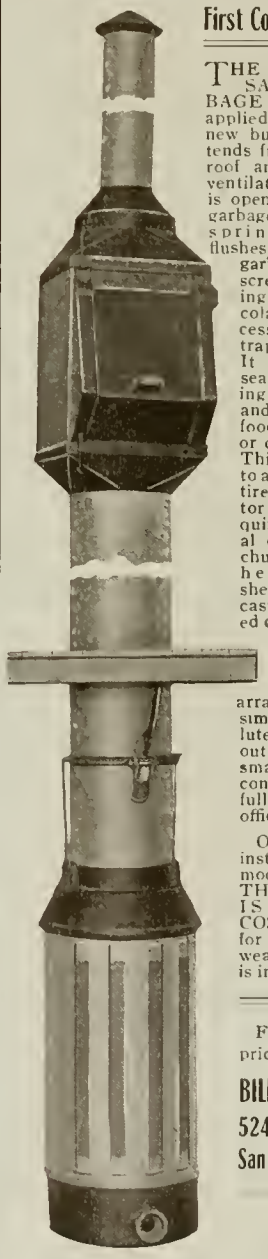

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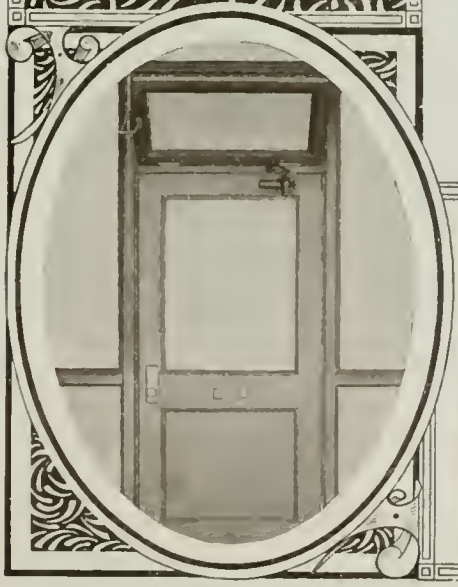

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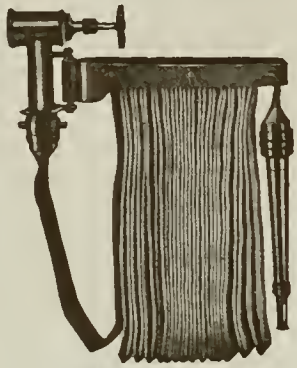

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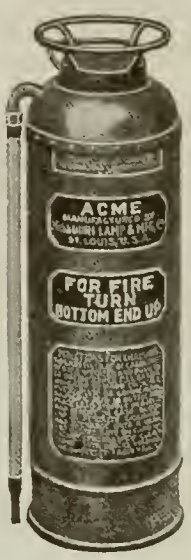

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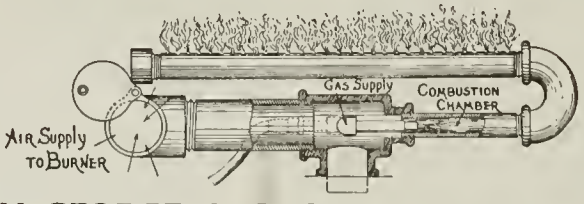

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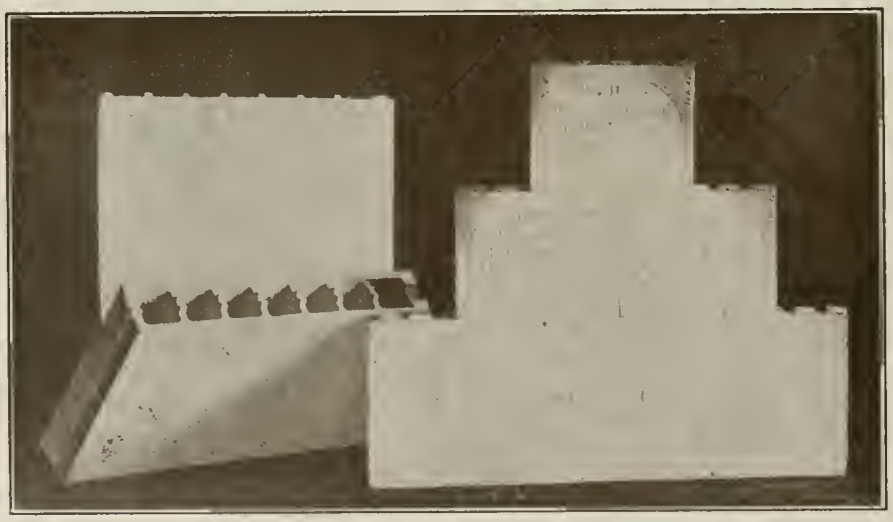

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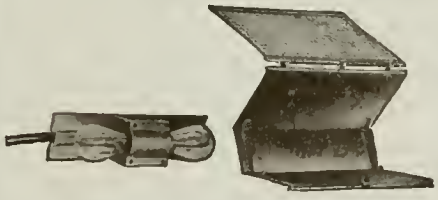

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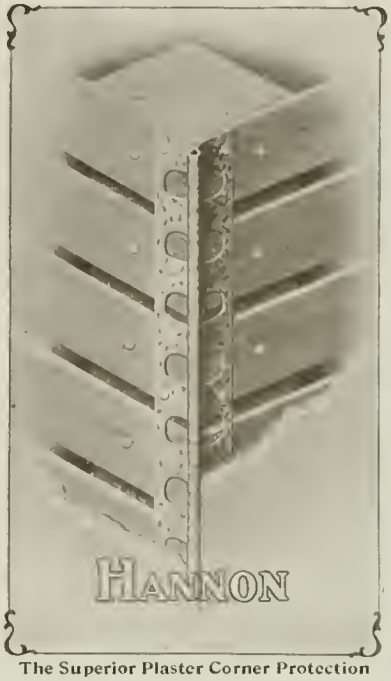

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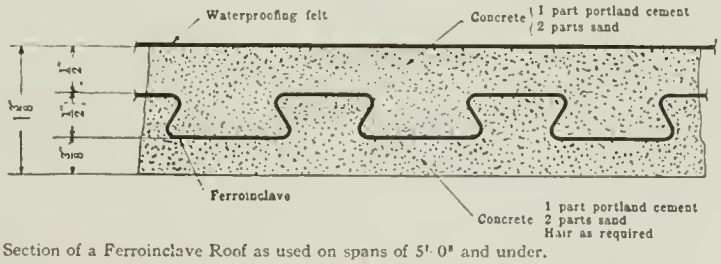

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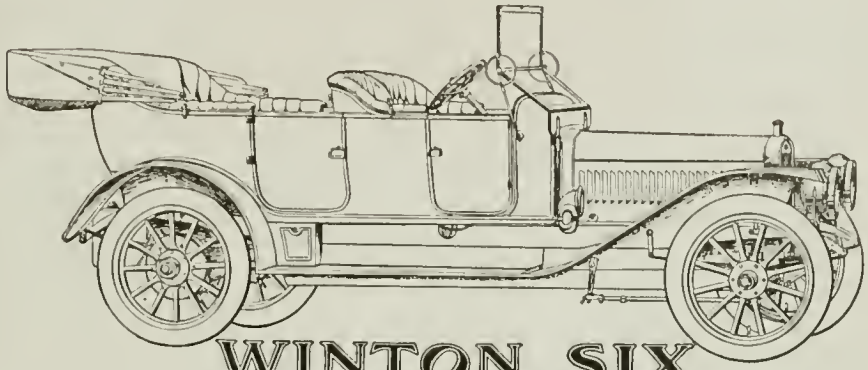

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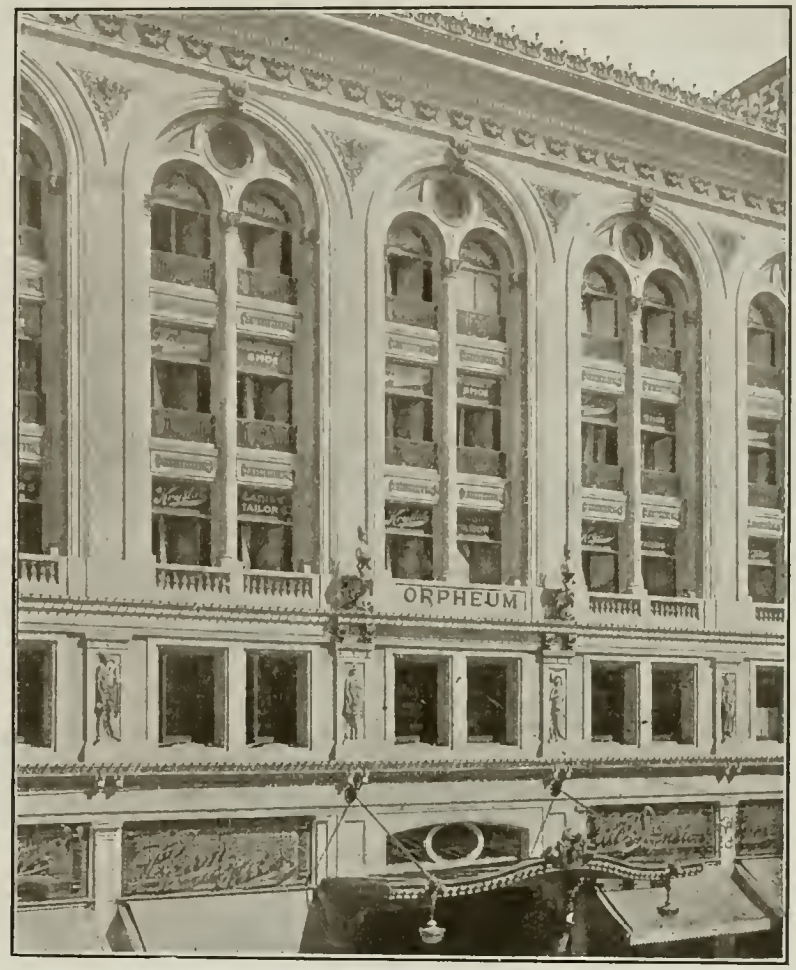

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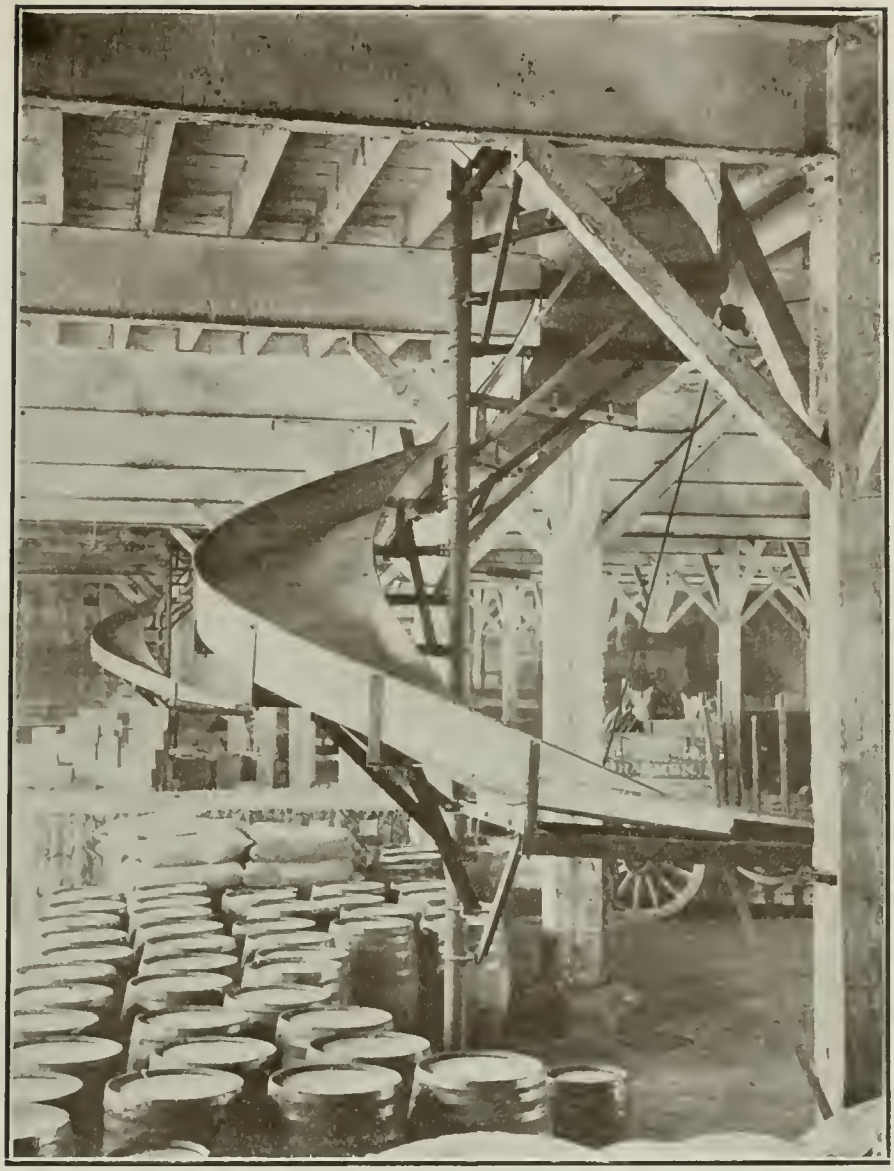

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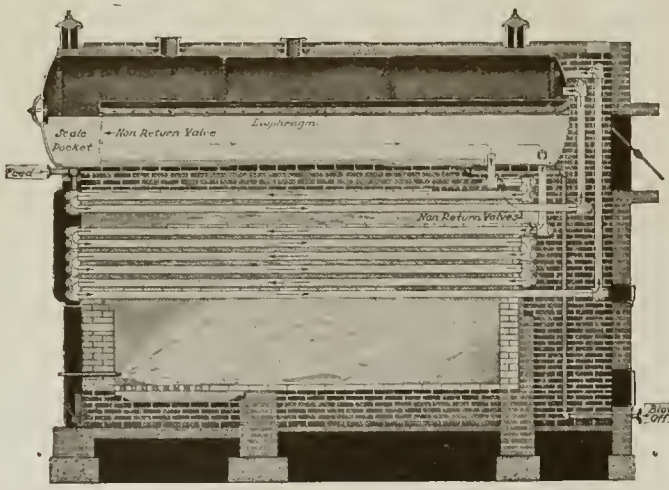

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OCTOBER, 1911

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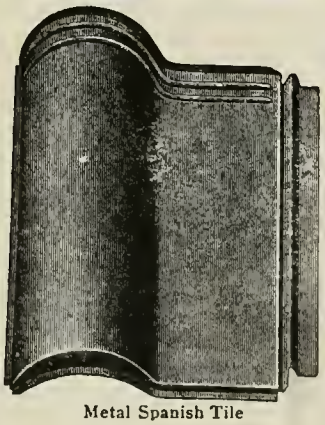

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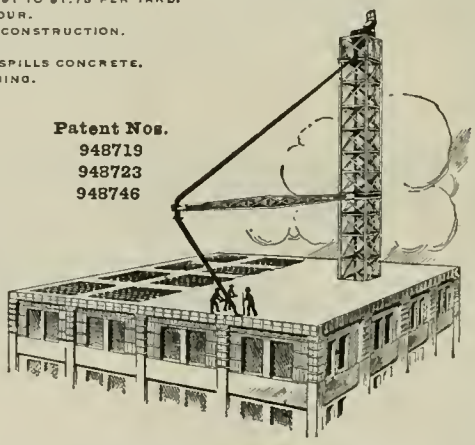

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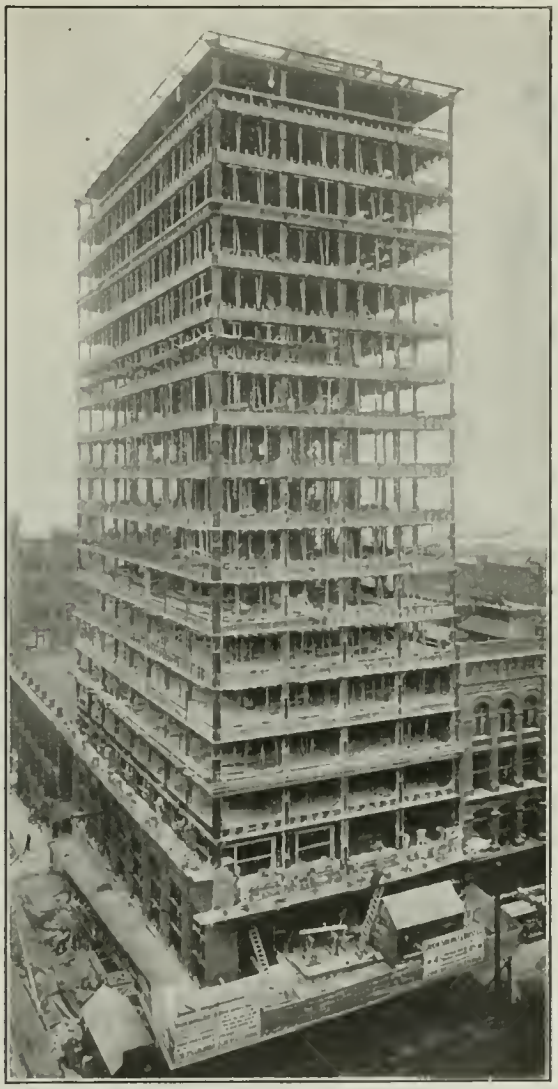

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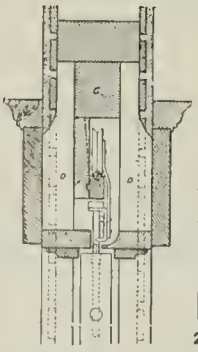

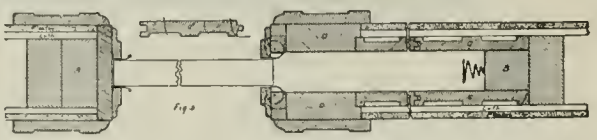

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(For Index to Advertisements, see next page)

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Western Iron Works, 141-147 Beale St., S. F.

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Gladding, McBean & Company, Crocker Bldg., S. F.
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.
N. Clark & Sons, 112 Natoma St., San Francisco

AUTOMATIC FREIGHT ELEVATOR DOORS
Boyd & Moore.....356 Market St., S. F.

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Weary & Alford Co., 303 Union Trust Bldg., S. F.

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H. N. Cook Belting Co., 317-319 Howard St., S. F.

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Whitaker & Ray-Wiggin Co., 776 Mission St., S. F.; 209 E. Seventh St., Los Angeles.

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Lord & Burnham Co., Boyd & Moore, Inc., Agents .....356 Market St., S. F.

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Wadsworth Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)

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Golden Gate Brick Co..660 Market St., S. F.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles
N. Clark & Sons, 112 Natoma St., San Francisco
Northern Clay Company.....Auburn, Wash.
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

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Waterhouse & Price.....59 Third St., S. F.

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Boyd & Moore.....356 Market St., S. F.
Pacific Portland Cement Co., Pacific Bldg., S. F.
Standard Portland Cement Co., and Santa Cruz Portland Cement Co...Crocker Bldg., S. F.
Standard Supply Co., First St. and Broadway, Oakland
The Building Material Co., "Medusa White Portland".....587 Monadnock Bldg., S. F.
Western Building Material Co., 430 California St., S. F.

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"Blanc," manufactured by Blanc Stainless Cement Company .....Allentown, Pa.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See distributing agents on page 123.]
Boyd & Moore.....356 Market St., S. F.
Petrifax Cement Coating, sold in San Francisco by Sherman Kimball, 503 Market St.

CEMENT EXTERIOR FINISH
Blanc Stainless Cement Co., Allentown, Pa. [See color insert for Coast distributors.]
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 123.]
Dexter Bros. Company, represented by Sherman Kimball, Hooker & Lent Bldg. (503 Market St.), San Francisco.
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
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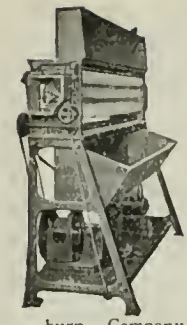

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CEMENT FLOOR COATING
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 123.]
- Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
- Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT TESTS
- Robert W. Hunt & Co., 418 Montgomery St., S. F.
- Smith, Emery & Co....651 Howard St., S. F.

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- Robert W. Hunt & Co., 418 Montgomery Street, San Francisco
- Smith, Emery & Co., 651 Howard St., S. F.

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- Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass.; sold by Parrott & Co., 320 California St., S. F.

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- Bluxome & Co.....Monadnock Bldg., S. F.
- Esterly Construction Co.....Berkeley, Cal.
- Peterson, Nelson & Co., Inc., 407 Pine St., S. F.
- Willis A. Clark & Co., 657 Monadnock Bldg., S. F.

CONCRETE FOUNDATIONS
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CONCRETE MACHINERY
- Wallace Concrete Machinery Company's mixers, hoists, loading devices, etc. Agents; Lilley & Thurston Co., San Francisco; Smith-Booth Usher Co., Los Angeles; A. R. Williams Machinery Co., Vancouver, B. C., and the Calder Bros. Co., Seattle, Tacoma, and Portland.

CONCRETE MIXERS
- Chicago Improved Cube Mixer. Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co.....Portland and Seattle
- Foote Concrete Mixers, Monadnock Bldg., S. F.

CONCRETE POURING APPARATUS
- Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

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- Clinton Fireproofing System, L. A. Norris, Monadnock Bldg., S. F.
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- The Kahn System, Agents in San Francisco, Los Angeles, Portland and Seattle.
- Triangle Mesh Fabric, Sales Agents, The Lilley & Thurston Co.....82 2nd St., S. F.
- Twisted Bars, sold by Woods & Huddart, 356 Market St., S. F.

CONCRETE SURFACING
- "Alkacene" Liquid Concrete, Boyd & Moore, 356 Market St., S. F.
- "Concreta," sold by W. P. Fuller & Co., S. F.
- Concreto, Worden-Meeker Varnish Co., S. F. and Oakland
- Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

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- Esterly Construction Co.....Berkeley, Cal.
- F. O. Engstrum Co., Fifth and Seaton Sts., Los Angeles
- Geo. H. Stoffels & Co., 830 Pacific Bldg., S. F.
- Henning & Burke.....242 Russ Bldg., S. F.
- Hoyt Bros., Monadnock Bldg., S. F., and Santa Rosa
- Ransome Concrete Co., Mechanics Institute Bldg., S. F.
- Rickon-Ehrhart Eng. & Const. Co., 1859 Geary St., S. F.
- Walter Hough Company, 503 Market St., S. F.
- W. H. Bagge & Son., Inc., 3528 Sacramento St., S. F.
- Williams Bros. & Henderson, 351 Monadnock Bldg., S. F.

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- "Prescott," sold by Boyd & Moore, 356 Market St., S. F.
- Union Metal Corner Company, 206 Summer St., Boston, represented on the Pacific Coast by Waterhouse & Price.

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- Niles Rock, sold by California Building Material Company.....Pacific Bldg., S. F.
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- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
- H. D. Samuel Co....Monadnock Bldg., S. F.
- John L. Fox.....207 Monadnock Bldg.
- "Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.....38 First St., S. F.
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Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

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G. Rischmuller .....Builders' Ex., S. F.
3442 19th St., S. F.

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"Cross" Counterbalance Automatic, Boyd & Moore, Agents.....356 Market St., S. F.

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents .....356 Market St., S. F.

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Central Electric Co..185 Stevenson St., S. F.
Electric Appliance Co., 726 Mission St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
Pacific Fire Extinguisher Company, 173 Beale St., S. F.

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Cleveland Art Metal Co., Boyd & Moore, Agents .....356 Market St., S. F.

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"Cross" Elevator Doors, Boyd & Moore, Inc., Agents.....356 Market St., S. F.

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W. W. Breite.....Clunie Bldg., S. F.

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Goodyear Rubber Company, 587-591 Market St., S. F.
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.

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Pacific Fire Extinguisher Company, 507 Montgomery St., San Francisco; Branch Offices, Portland, Seattle and Spokane.

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John M. Reynolds, 1201 Devisadero St., S. F.

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Bass-Heuter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
Standard Varnish Works, Chicago, New York and S. F.
Worden-Meeker Varnish Works, S. F. and Oakland

FLOORS—COMPOSITION AND TILE
"Kompolite".....350 Mills Bldg., S. F.

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Locke Foundation Company, 1107 Crocker Bldg., S. F.

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Bowser & Co.....612 Howard St., S. F.

GARBAGE CHUTES
Bradshaw Garbage Chute, sold by C. T. Jacobsen.....524 Pine St., S. F.

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Backus Patent Gas Grates and Logs, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

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United Glass Co.....115 Turk St., S. F.

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Bay Development Co....153 Berry St., S. F.
California Bldg., Material Co., Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
J. P. Holland.....Army St. Wharf, S. F. Phone Mission 5466.
Natomas Consolidated, Peoples' Savings Bank Bldg., Sacramento

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Empire Hard Wall Plaster Co., Pacific Bldg., S. F.
Reno Hard Wall Plaster, sold by Western Building Material Co., 430 California St., S. F.
Standard Supply Company, First St. and Broadway, Oakland

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Boyd & Moore.....356 Market St., S. F.
Dieckmann Hardwood Co., 244 California St., S. F.
Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
Niehaus & Co.....548 Brannan St., S. F.
Parrott & Co.....320 California St., S. F.
Strahle Mfg. Co., First St., betw. Washington & Clay, Oakland
White Bros., Cor. Fifth and Brannan Sts., S. F.

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Niehaus & Co.....548 Brannan St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

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Jno. G. Sutton Co.....229 Minna St., S. F.
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Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.

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David Duncan .....340 Sansome St., S. F.

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John G. Ils & Co.....827 Mission St., S. F.

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McRorie & McLaren, Westbank building, San Francisco.

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Holmes Lime Company, Mutual Savings Bank Bldg., S. F.
Standard Supply Co., First St. and Broadway, Oakland
Western Lime & Cement Co., 268 Market St., S. F.

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Adams & Hollopeter....745 Mission St., S. F.
J. F. Kelly Company, 723 7th St., Oakland
The Palmer Shop.....1345 Sutter St., S. F.

LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents, 356 Market St., S. F.

LUMBER
Santa Fe Lumber Co., Seventeenth and De Haro Sts., S. F.

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Machinery and Electrical Co., 351 N. Main St., Los Angeles

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Mangrum & Otter.....561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

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Columbia Marble Co....268 Market St., S. F.

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Ferdinand Wagner .....609 Waller St., S. F.

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Roebling Construction Co., Crocker Bldg., S. F.

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Berger Mnfg. Co.,....1120 Mission St., S. F.
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Dahlstrom Metallic Door Co., Western office, 722 Merchants Exchange Bldg., S. F.
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Waterhouse & Price.....59 Third St., S. F.
Zahner's Monarch Hollow Metal Doors and Trim, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

METAL FIRE PROOF PARTITIONS
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C. J. Hillard Company, Inc., 211-215 Eighth St., S. F.
Sartorius Co., Inc...16th and Utah Sts., S. F.
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Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
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Goheen Carbonizing Coating, sold by Sherman Kimball, Hooker & Lent building, S. F.
Neponset Paints, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.,.....82 Second St., S. F.

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R. N. Nason Company.....San Francisco
Paraffine Paint Co.....38-40 First St., S. F.
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Crane Co....Second and Brannan Sts., S. F.
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Jno. Douglas Co.....571 Mission St., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent .....135 Kearny St., S. F.
N. O. Nelson Mfg. Co., 978 Howard St., S. F. 406 E. 4th St., Los Angeles
Geo. H. Tay Company, 617 Mission St., S. F.

PLUMBING SUPPLIES
California Steam & Plumbing Supply Co., Fifth and Bluxome Sts., S. F.

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F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
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H. D. Samuel Company, 1054 Monadnock Bldg., S. F.
Harry Larkin,.....Builders' Exch., S. F.
Mackenzie Roof Co., 425 15th St., Oakland
Meurer Bros. Co., A. H. McDonald, Coast Representative.....628 Third St., S. F.
Pioneer Roll Paper Co.....Los Angeles
Western Builders' Supply Co., 680 Mission St., S. F.

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Goodyear Rubber Co...587 Market St., S. F.
New York Belting & Packing Co., 129 First Street, S. F.

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Howe Scale Company, 333 Market St., S. F.

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Del Monte White Sand, sold by Pacific Improvement Company, Main office, Crocker Bldg., S. F.
J. P. Holland.....Army St. Wharf, S. F. Phone Mission 5466.

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Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

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- Jno. B. Leonard.....Sheldon Bldg., S. F.
- Judson Manufacturing Company, 819 Folsom Street, San Francisco
- Woods & Huddart.....356 Market St., S. F.

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- Thorne Hold-Fast Metal Store Front Construction, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

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- Sanborn & Corinson....251 Kearny St., S. F.

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- Dunlevy & Gettle....79 City Hall Ave., S. F.

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- The J. F. Kelly Co..723-731 7th St., Oakland

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- Ericsson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents..356 Market St., S. F.

VENEERS
- Dieckmann Hardwood Co., Welch Bldg., 244 California St., S. F.
- White Bros., Cor. Fifth and Brannan Sts., S. F.

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- Marsball & Stearns Co., 1154 Phelan Bldg., S. F.

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- Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.

WATERPROOF FINISHES—Continued
- Glidden's French Caen Stone Finish and Glidden's Waterproof Flat Finish, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
- "Trus-Con" Finish, sold by Western Lime & Cement Co.....268 Market St., S. F.

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- "Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
- Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
- Glidden's Concrete Floor Dressing and Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
- Neponset Waterdyke Felt and Compound, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents Lilley & Thurston Co., 82 Second St., S. F.
- Parrott & Co.....320 California St., S. F.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
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- The Building Material Co., Inc., 587 Monadnock Bldg., S. F.

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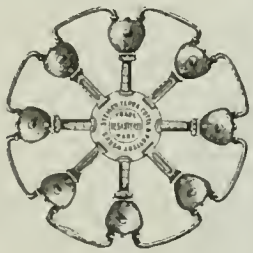

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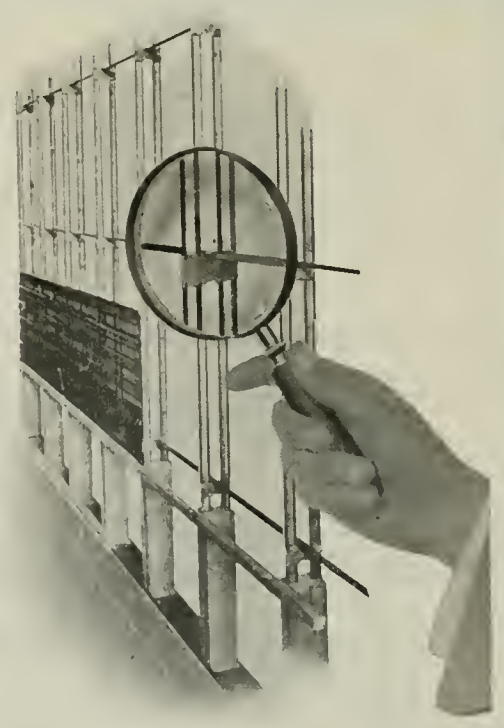

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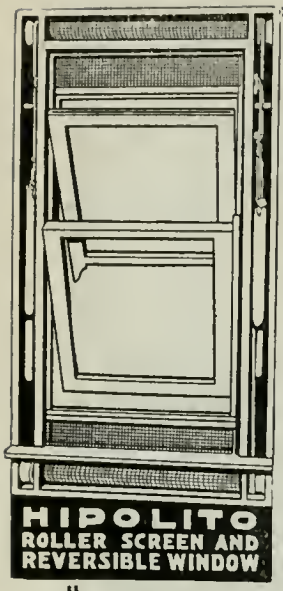

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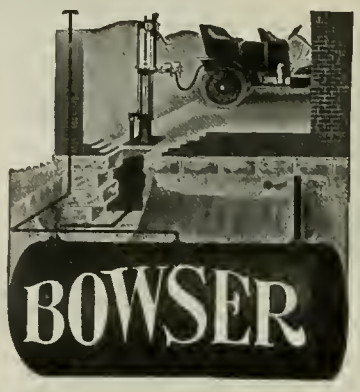

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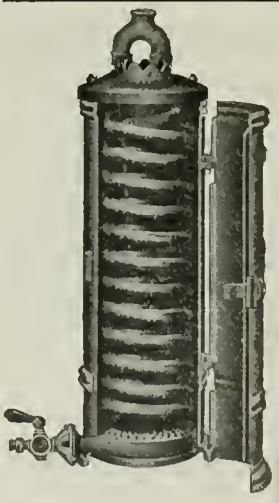

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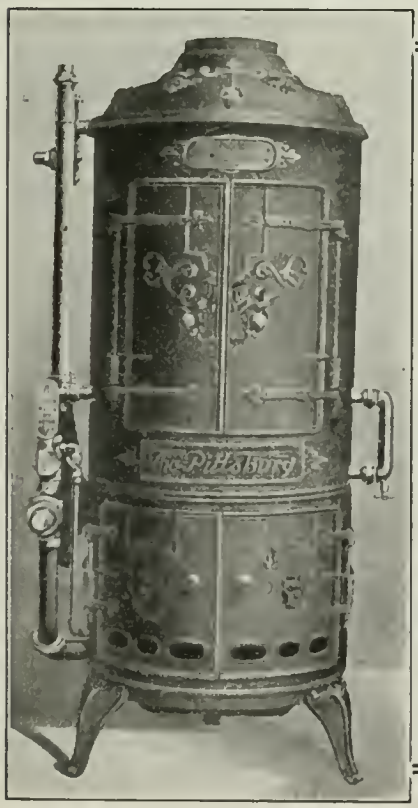

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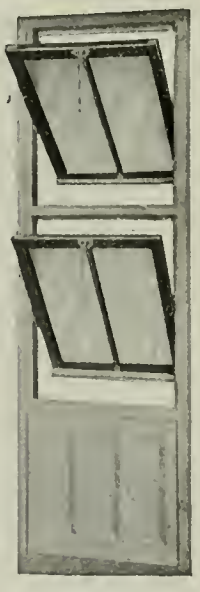

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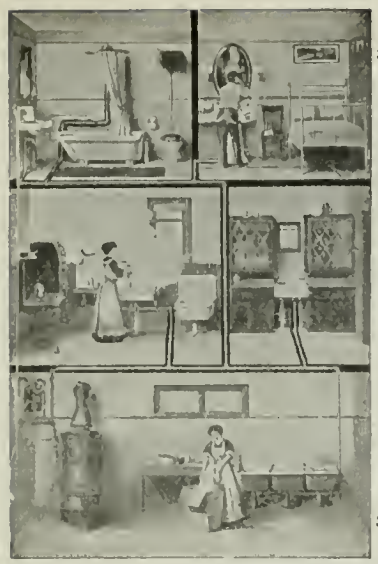

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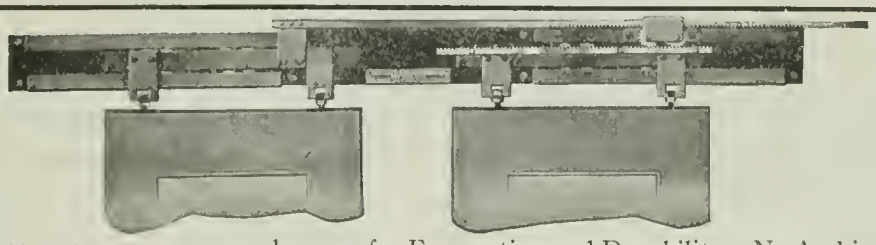

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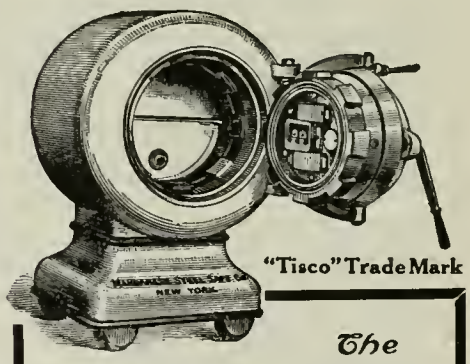

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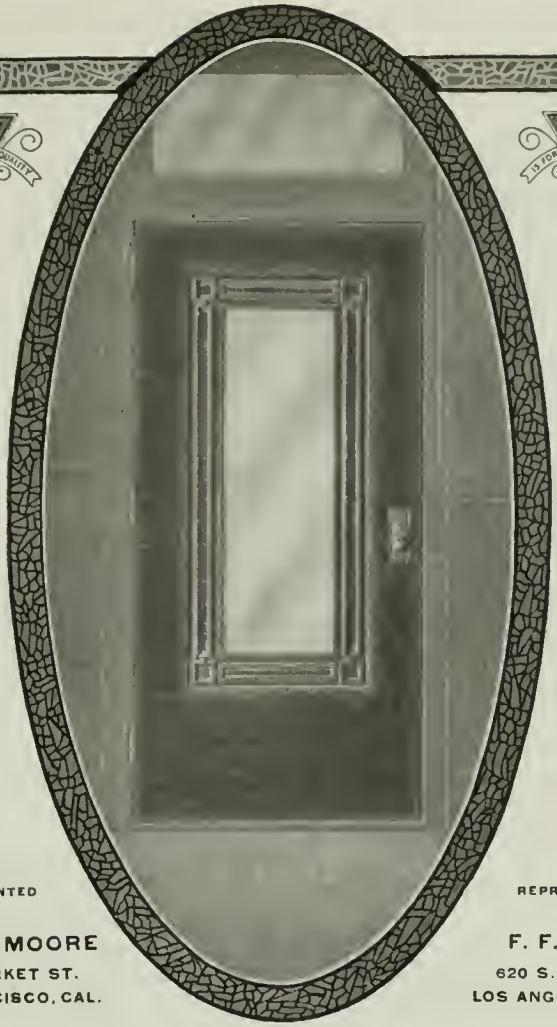

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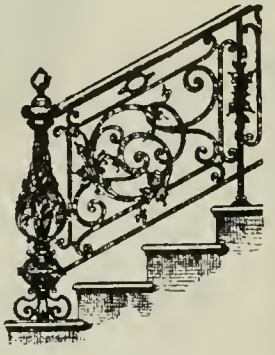

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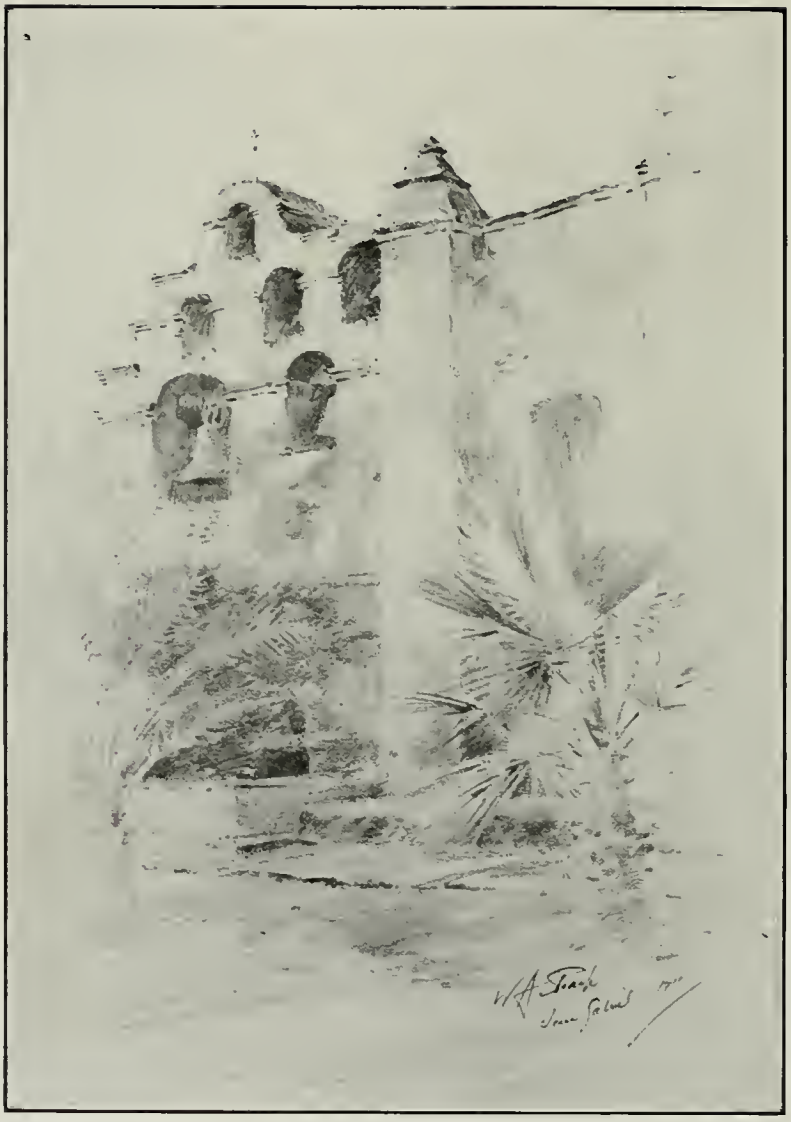

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The Country Estate in California

By DONALD McLAREN*

WHILE the country estate with its spacious grounds and gardens is a subject which is by no means new to the Pacific Coast, nevertheless until within the last decade it was a matter which had received attention by but a few of our very wealthy pioneers. For instance, forty years ago in all California we probably would not have found many country homes with highly developed gardens and grounds, and what few existed would have been limited practically to homes along the Peninsula in San Mateo county, to Oakland and its suburbs, and to Marin county. These few were, however, very fine examples of the landscape gardener's art. In passing it might be well to mention the estate of D. O. Mills, of Millbrae, the W. H. Howard, the Parrott and Hayward estates at San Mateo, and the Reddington and Barrelhoit estates at Burlingame, the Leland Stanford estate at Palo Alto, and the James Flood and Hopkins estates at Menlo Park. These old estates covered tremendously large areas, and in addition to the home grounds conducted farming operations on a large scale.

However, during the last decade, and for a few years previous to this time, we find a most distinct movement countryward, and the result has been that many of the larger estates have been subdivided and the portions around the old homes have been more highly embellished by the landscape gardener's art, and many of the old homes either have been torn down or remodeled along modern lines.

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Two Views Showing Results of One Year's Work in Landscape Effects on the A. B. Spreckels' Estate, Napa, California

The development of the modern California country estate is not, however, confined to the bay region, but is scattered throughout our entire State. Magnificent estates have been laid out around Los Angeles, Pasadena, San Diego, Santa Barbara, and in our interior valleys we find a great interest being taken along these lines. As our cities are filling up, and especially since the automobile has become of such universal use, we find that the wealthy people of the interior cities, like those of our own bay region, are forming their country estates and country clubs outside of the city limits, and adorning them in a fitting manner.

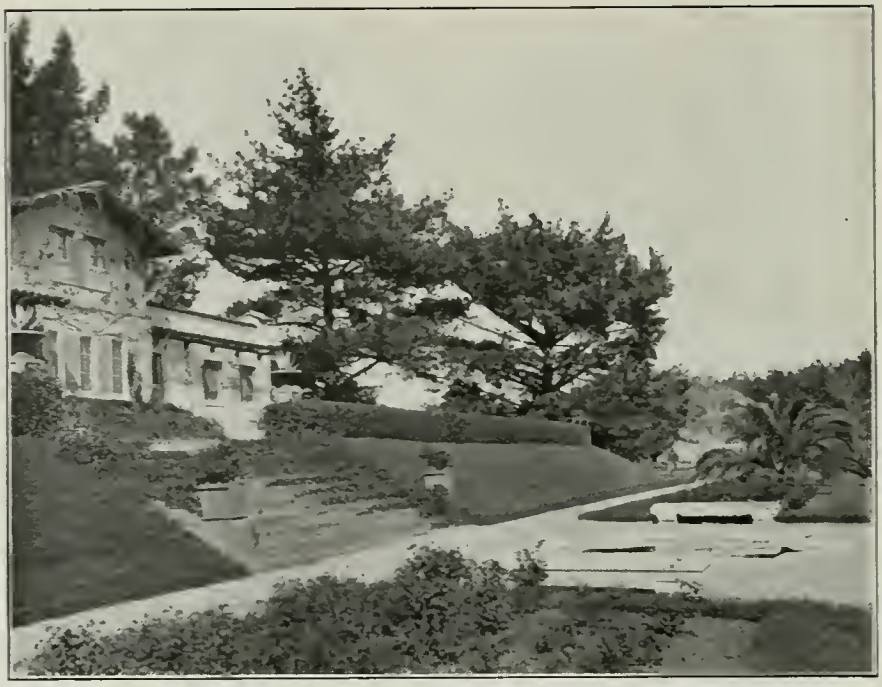
The development of parks is also receiving attention by the majority of our progressive inland cities, and even some of the smaller towns are working along these lines.

While there are still quite a number of very large estates which conduct, in addition to gardens and grounds surrounding the home, stable, etc., farming operations on quite a large scale, nevertheless in the majority of cases land is becoming too valuable for such usage, particularly along the peninsula of San Mateo county, with the result that only sufficient grounds surrounding the homes are maintained in order to give a fit setting to the house and to permit of the necessary graceful approaches thereto.

These fine country homes are undoubtedly a result of the desire to escape from the crowded conditions of our city life, as our cities are gradually filling up and becoming more and more congested each year. It is also a result of an increasing desire for the simpler and more natural life of the country, affording as it does opportunities for such varied sports and outdoor pleasures and activities. The country homes are in many cases becoming notable examples of architecture and are as commodious and attractive places of residence, with their luxurious furnishings and wealth of conveniences, as may be found in any of our cities. This love of the country is undoubtedly on the increase and is becoming one of the most notable features of our social life.

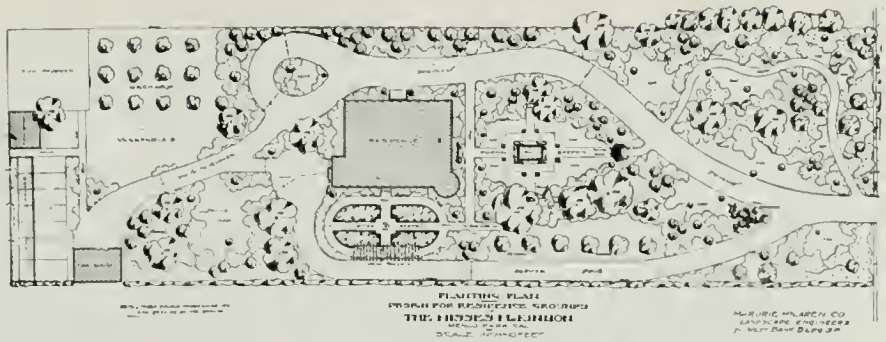
In the laying out of a suburban place, one of the most important considerations is the selection of the house site, and in this connection it is always advisable before the selection is definitely decided upon, to have a competent landscape engineer go over the ground and give his opinion with reference to the selection, as there are a few essentials which should not be lost track of. The general contour of the ground and the natural environment have, of course, a great deal to do in determining a house site, but a most important element, and one which is often entirely neglected, is the opportunity afforded for graceful approaches to the house from the entrance to the grounds, and from the garage, stables, etc. Many a country place has been greatly marred by the injudicious location of the house site, and many natural advantages have been absolutely lost in this manner. In the selection of a house site the owner, the architect and landscape engineer should collaborate. This applies as well to the location of garages, stables and whatever other buildings are proposed for the country estate.

Even before the work of building is commenced, it is always advisable to have a reliable landscape engineer work out a general plan to cover the entire grounds and gardens which are under contemplation, and show in detail what driveways, walks, pools, greenhouses and special features are advisable. This plan should also locate whatever trees and groups of shrubbery and flower beds are proposed, as well as all garages, stables and other outbuildings. Too much stress cannot be laid upon the importance of this, as many otherwise fine places have been ruined, and many oppor-



Terrace Garden, Estate of Mr. Henry P. Bowie, San Mateo, California

Formal Pond Effect, with Straight Walks, Estate of Mr. Henry P. Bowie, San Mateo, California



Plan for Residence Grounds, Estate of the Misses McKinnon, Menlo Park, California

tunities have been neglected by the introduction of features which are entirely out of keeping with their surroundings, and by unfortunate planting by those who are unfamiliar with the habits of the trees and shrubs which they are setting out, with the result that at some future date it has been necessary to remodel the entire place in order to obtain the proper effects. How often do we hear people say that with all the money they have spent on trees and plants their gardens still are very unsatisfactory. In planning a garden, it must always be borne in mind that one is planning for the future effect, and that the planting must be arranged accordingly. It is the effect which will be produced when the trees and shrubs are fully grown that we are planting for, and in order to provide for this it is absolutely necessary that one be familiar with the habits and characteristics of all the plants recommended. The grouping or massing of trees, shrubs, plants or bulbs, in order to produce certain effects at special seasons of the year, can only be successfully accomplished by one who has full knowledge of the habits and character of such plants. In fact, to attempt to lay out a country place without the aid of the landscape engineer is equivalent to attempting to build a house without the services of an architect which, certainly, none of us would consider for a moment.

We find with reference to landscape effects on this Coast that there is a distinct desire on the part of country landlords in most cases to confine themselves to natural effects—to produce sweeping lawns with natural groups of hardy flowering trees and shrubs, although we also find many notable examples of high-class formal gardening. We, in California, are enabled to use, by virtue of our even and temperate climate, a class of evergreen trees and shrubs which are prohibitive in Eastern and most European countries, and by this means we are enabled to have green effects the entire year, and as many of the evergreen shrubs and trees flower in the winter season, by careful selection a wealth of color may be obtained the year around.

However, it would be a mistake to adhere entirely to evergreens, as so many of the deciduous shrubs, such as weigelas, spireas, snowballs, mock orange, lilacs, etc., admit of such beautiful spring and summer effects.

Palms are naturally a feature of our California landscape effects, and appeal very strongly to all of our eastern visitors. This is especially true of all of our Southern California estates.

Naturally, in the selection of the style of garden there are certain fundamental principles by which the landsape gardener must be guided. These are primarily the style of house which has been selected by the owner, which must guide absolutely the style of the grounds immediately

House of Mr. W'm. T. Sesnon, at Aptos, California
W'ard & Blohme, Architects

surrounding the house. Also the natural contour of the ground, and the environment have great bearing on the style of garden which may be recommended. Some situations adapt themselves naturally to formal treatment, while others offer better advantages for natural groupings and broad effects. Wherever possible it is advisable to utilize water in the form of lakes, rivulets or waterfalls, as nothing adds so much to the beauty of landscape as water effects, especially in California, as we are without rain for practically three-fourths of the year.

There are many classes of plants which it was formerly presumed would not thrive or flourish in our California climate, among which are rhododendrons, azaleas and kalmias from the European countries, and the

View on the W'm. T. Sesnon Estate, at Aptos, California

Driveway and Front Entrance to Mr. Wm. T. Sesnon's House, Aptos, California

magnificent and stately tree fern of Australia. This has been demonstrated to be absolutely a false idea, as we find that the rhododendrons, etc., do remarkably well when planted underneath our native live-oaks, where they find the nourishing leaf mould, which is a condition they prefer above all others. It is only necessary to see that they receive a plentiful supply of water, and the results which they give in the late spring and early summer can be equaled by no other class of plants; in fact, they are in a class by themselves.

The magnificent tree ferns of Australia, among which are the Dicksonas, Antartica and squarrosa, Alsophila austarlis and Cyathea medullaris and dealbata, are a class of plnnts concerning which, until within the last two or three years, little has been known of, as far as their adapt-

Lake Effect in the Making of the Wm. T. Sesnon Estate, at Aptos, near Santa Cruz, California

ability to our California conditions are concerned; in fact, we find them growing and luxuriating in our dry Southern California atmosphere. The accompanying illustration of a group at Mr. H. E. Huntington's place at San Gabriel is a good example of what may be done with these ferns when planted under the shade of our native trees, and given sufficient nourishment and water. Certainly nothing could surpass this magnificent group. They will very naturally, do far better in the counties surrounding the bay region than in the dryness of Southern California, as we have a much damper atmosphere in the bay section. It has also been found that a far greater interest is being taken in plant life, and a much finer class of plants

Belgian Bay Trees of Various Sizes, at the Fairmont Hotel, San Francisco

is continually being used in landscape work in California than heretofore. Bulbs, such as hyacinths, daffodils, narcissus and tulips are now becoming a feature of all our spring effects. Bulbous plants form a highly interesting class of plants, and are of the utmost use and importance, not only to large gardens, but to small as well, as they are very easily grown, and afford such fine results to amateur and professional alike.

Roses, like bulbs, are of easy culture and give good results. The rose garden, however, should be made a feature of every garden, as the roses come in crops and should be made to furnish a wealth of color. A rose garden should be laid out in beds of solid colors, which will be found to give the best effects, care being taken that the colors do not clash.

It is remarkable what may be accomplished in the line of landscape work on a country estate within a space of a few months, and without any prohibitive expense, particularly in the line of natural effects. The accompanying illustrations of the A. B. Spreckels' grounds at Napa, and the grounds of Mr. W. T. Sesnon, in the Santa Cruz mountains, are good examples of what may be done in this respect.

During the last few years a decided interest has sprung up with regard to greenhouse and tropical plants, particularly orchids, than which there is no more interesting class of plants. Notable, of course, among the orchids, are the stately and beautifully colored Cattleyas of South and Central America, from which, by careful selection, a wealth of bloom may be obtained the year around, with a very limited number of plants. The Phalaenopsis, or moth orchid, from our own Philippine Islands, with its beautiful sprays of pink and white blossoms, is also a universal favorite, as it blooms here in California three times during the year. It was formerly supposed that orchids were so expensive and so hard to cultivate with success that they were prohibitive for most country estates, but this has been found to be a mistaken impression, and now we find that the country estate is not complete without its collection of orchid and foliage greenhouse plants.

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Bennett to be Polk's Right-Hand Man

Edward R. Bennett, a graduate of the Ecole de Beaux Arts and for several years before the fire engaged on the plans for the beautification of San Francisco, has been appointed by President C. C. Moore to take up the study of the general plan of the Panama-Pacific Exposition with the Executive Architectural Council.

Bennett, who is virtually a Californian, was for a long time in the employ of various San Francisco architects. He won a scholarship to Paris and entered the famous architectural school of the French capital, where his work immediately attracted attention. After graduating with honors he was taken into the office of George B. Post of New York, one of the original architects of the Chicago Exposition and the dean of the profession in New York. Soon afterward the attention of D. H. Burnham was directed to Bennett, and he went with him to Chicago to take up the study of the plan for that city. Later he worked on the plan for the city of Washington, then on the so-called Burnham plan for San Francisco, and on the plans for Minneapolis, Portland and Cleveland.

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The man who is satisfied to follow the crowd never gets to the front.

Railroad Architecture — A Frank Criticism of the Pennsylvania Terminal*

By F. W. FITZPATRICK

THOUGH I have been in the new Pennsylvania Terminal at New York several times since completion, it was only yesterday that I had an opportunity to really study it, absorb and digest if and, frankly, it was a bit unsatisfying, almost indigestible.

Done by McKim, Mead and White, famed as artists, easily the top notch in our architectural world, one would expect much of it, and it certainly is fair game for criticism. It has been extolled to the sky; critics have gushed over it; its designers have modestly admitted that it was their best, and we naturally awaited something wonderful.

Externally it is impressive, monumental, immaculately correct—according to the books—but not quite as pleasing, in my humble opinion, as the terminal in Washington. The concourse is good because it is simple and straightforward, a well lighted, great shed. It does seem, however, that something better could have been done to meet the practical requirements. The difference in levels are necessarily many and great. One would think that grades would have been provided, escalators, some ingenious device rather than the never-ending stairs. You are not on the level for more than two minutes at a time. It's all right for young folks and for athletes, but I miss my guess if there is not soon a mighty growl from the New Yorkers, men who spend thousands to change their old shops over so that they are on the level with the street instead of even one or two steps up. The steps were very scientifically devised, no doubt, and are just right and all that sort of thing, but "steps is steps," and after going down from the street level to buy your ticket then up to eat something, and then down again to the train you feel as if you had come down the Washington monument.

But, in this sketch, I am not concerned with the practical details of the scheme; it is the architecture that impresses me—the general waiting-room that has been so lauded—that disappointed me.

The colors are fine, the materials beyond reproach, but the style, the proportions, the treatment, are distinctly below par. The room, in size and pretension, is not unlike the waiting-room in the Washington terminal.

It was done by artists who had not to consider cost nor space. It is the show room of the whole thing, and their "piece de resistance." They were virtually "let loose" as few other architects ever were, and we were justified in expecting something superlatively fine, and the result is not half so satisfying as is the Burnham room in Washington, and the Burnham aggregation of talent is supposed merely to be a commercial combination, successful "business" architects who do an enormous amount of work, do it well and most expeditiously, but have never been accused of being

*Written especially for The Architect and Engineer of California and Pacific Coast States.

"artists"; indeed, I doubt if they even claim any extraordinary artistic attributes. Sure it is that in the profession the name of Burnham has never been mentioned in the same breath as that of White or of McKim when high art was being discussed. Yet here we have a master's work, a chef d'oeuvre, something evolved supposedly in the very clouds, but that is distinctly inferior to, infinitely less satisfying than the work of a "commercial" architect, what might be called, and perhaps was called by the elect, a "shop product."

The room is too high; it is stilted. Better far had it been kept at the street level. The eight great columns do not belong there, they tie in with nothing, they apparently carry nothing; beautiful proportions and all that, but lugged in just to have columns. They are lonesome, there is no entablature to bind them together, and they are so far apart that instead of giving the impression of great strength they, in spite of their enormous size, look weak and as if planted there as a species of light standards, or as specimens or samples of columns as one sees in a decorator's showroom.

The same mistake was made in the Burnham Washington station exterior. There, too, the great columns of the portal do nothing; are mere projections; decorative, buttresses perhaps, but not serving any function for which columns are especially adapted. That sort of thing always looks as if a column had been lugged, in spite of itself, put there to be rid of it because a fellow happened to have it on his hands.

The columns of the New York room are alleged to carry the vaulted ceiling, but that ceiling lands down upon them in thin weak wedges, and in spite of the apparent intention gives no excuse whatever for the presence of the columns. Better far would it have been had that ceiling sprung from the impost below, the entablature of the minor order forming the side walls. The room would have been in better proportion, the lonely columns eliminated and the exterior helped, for now that room tops out over the rest of the composition, an ill-proportioned, top-heavy, a crushing clerestory that serves but to dwarf the rather good colonnade below.

The ceiling itself is, to me, at least, distressing, weak in the extreme, characterless. For all the world it reminds one of an effort in "stamped steel" that had been tacked on afterward, as is done in old stores, etc., where an attempt is made to render the room somewhat "fireproof." The coffers on the different facings of the vaulting do not harmonize and the vaulting meets in a thin, raw edge as if indeed the "stamped steel" were a stock pattern and just cut out with the very least waste.

The soft coloring of the great maps forming a frieze around the room helps out the monotone of the stone work; the excellence of the detail and its purity do much to redeem the room, but as a whole, a great composition, something that should have been the most beautiful room in the world, it is a distinct failure, a lost opportunity, a sad disappointment.

It is probably a most perfect enlargement of some Roman bath or temple or palace. I forget what was its particular prototype (nearly all the McKim or White monumental works are measured replicas or enlargements of something or other in ages gone by), but that does not redeem it. Such a room as an emperor's bath may have been very suitable, very beautiful, but is that any criterion that, enlarged ten or twenty times, its proportions are going to be as pleasing, are going to remain as effective in their exaggerated state as in the original that can be comprehended, taken in, so to speak, at one glance?

I never could see the reason for a slavish adaptation of any special room or building of antiquity to our modern purposes, any way. It certainly is

a rather sad commentary upon our ingeniousness and fertility of mind, and perhaps better than any other illustration shows our modern paucity of expression, how seldom we really rise to our grandly new opportunities, when we have to plant Roman or Greek temples and baths and things down bodily to do duty as strictly modern railway stations, breweries and stock exchanges. As I said before, somewhere or another, we should be consistent and do the whole thing up properly, and in the Roman temple stations of New York and Washington the ticket sellers and gate men and such should be garbed in togas and sandals, and the locomotives made to resemble chariots, or, better still, "quadrigas!" And by the way, how strange it is that nowhere about the New York or the Washington stations could I find a quadriga. I thought that all well regulated classic efforts should be surmounted by quadrigas. At first I believed I had discovered one over the New York portal, but, alas, there was I disappointed again, for instead of the fiery steeds 'twas but an every-day, ordinary time-serving clock.

Farmers and Mechanics Savings Bank Building, Sacramento, California
Charles S. Kaiser, Architect

Suggestion for a Radial Auditorium, San Francisco, California
Louis Cowles, Architect

A New Scheme for San Francisco's Civic Center

By LOUIS COWLES, Architect.

THE Panama-Pacific Exposition directors have intimated a desire or a hope to establish a civic center, as a part of the fair, and invited offers of land for an auditorium to start with; but how much they will be able to do in this direction must depend very largely on the terms made available by property owners; first, by those whose land should be acquired for the purpose, and second, by the neighboring owners whose property would be distinctly benefited by the civic center with its various institutions over and above what would result from the ordinary growth of business without any civic center.

For it is not to be expected that the fair management, or the city's taxpayers can afford to confer such a large benefit on this limited district without some reasonable return.

Near the end of this article will be found in outline a most excellent co-operative plan of financing the enterprise, very equitable, mutually beneficial to all concerned, practicable and not very hard to carry through, if the proper course be followed—yet most economical and profitable to all—gaining millions in the end over the former ways of doing such things.

But first, as touching main reasons and purposes:

Why do we need a civic center? Why does man need a brain to center his nerve system, or a heart to collect and redistribute his life blood, on the free, full and vigorous circulation of which his very life depends? Every living organism needs a center, or a system of centers, well planned, thor-

oughly organized and perfectly adapted to all its varied needs, its work and requirements; otherwise it cannot live and thrive; and the character and quality of its life and usefulness is vitally dependent on the character and quality of its organic centers.

In our civic life in San Francisco we are entering upon a new era. A bright and beautiful future is before us. We must become far more of a living civic and social organism than we have ever been before, and we must have a suitable place and room to grow in our civic center, or we shall fail to achieve our best destiny.

This ought to be near the center of population now and hereafter; also near the centers of business, industrial and other activities.

There ought to be now or hereafter many avenues of travel (arteries) radiating from this center to all sub-centers and to the outside world, to render easy, economical, swift and efficient coming and going for all.

And here should be not only our new and beautiful City Hall as a central feature, but many other buildings of a more or less public character —to be added as needs arise and means are available.

Some of these already in sight or suggested may be the Public Library, a State Building for Courts and Commissions, a great Union Railway Station, or at least a branch; Municipal Offices for Street Railways and Water Works (if not included in City Hall), an immense Auditorium, the Armory not far away, a Masonic Temple, the Humboldt Evening Polytechnic School, and others may follow or precede some of these, besides some already established.

All require suitable space to locate in an organized and systematic general plan—not crowded or jammed together in a mass like ordinary business buildings.

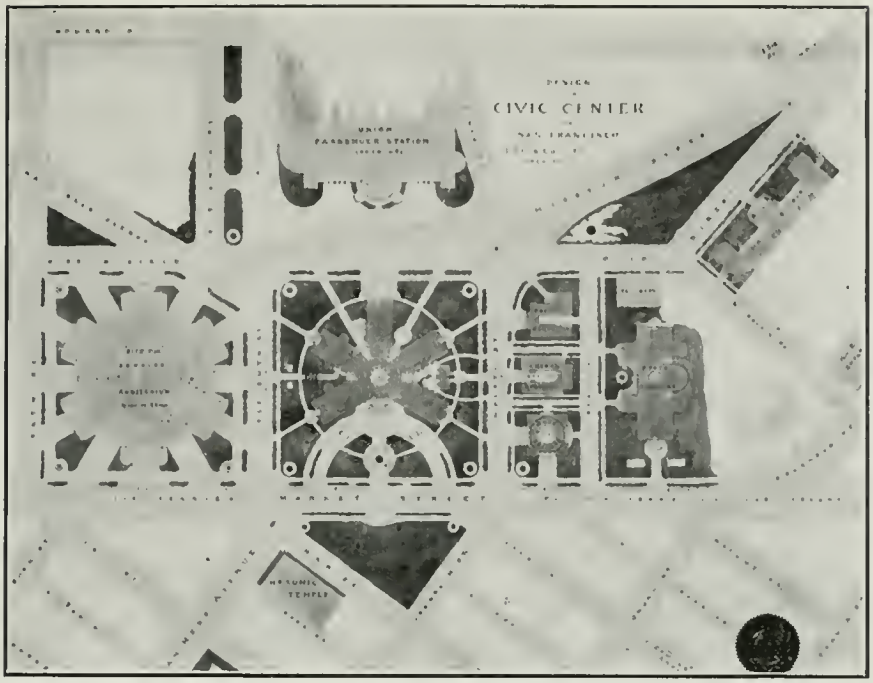
The old city hall site is far from being adequate for our needs. It can never give lasting or general satisfaction, with only room for about one new building, and shut in on a back street, with but few and minor lines of travel, and only visible by a few peeps from the main thoroughfare where most people pass.

The old foundation, so badly planned, is unsuitable to use, and to build on it would cost a half to a full million dollars too much—worse than a dead waste, as a far more convenient, more beautiful and suitable arrangement can now be had, at less cost—and much of the old material can be taken out at a profit and used elsewhere.

Let us look at the plan of the new site (the original should be seen)—at the junction of Market street and Van Ness avenue, reaching south to Mission street at the great bend. A site as near the center of population as we can well get, and not too far from centers of business, etc., especially after a few years of growth following the Panama canal and our exposition, and well open to view both near and from afar, and easy of access from all quarters.

Now see the connections: Market street from the ferries on the bay to the base of Twin Peaks—or some of these days on through under to new regions beyond and the great Pacific Sea—broad Van Ness avenue rising o'er the swell for thirty blocks away, to the Government reservation just within the Golden Gate, with every car line crossing it sweeping the glorious vista to the beautiful City Hall.

On the other side, the edifice stands fronting to the sun, and the great main artery of Mission street swings with stately curve around to meet us at the doors; or sweeps into broad new Twelfth street, a wide and graceful garden gateway into Market and the north.



New Civic Center Scheme for San Francisco, California
Louis Cowles, Architect

Eleventh street at hand, broadened for a block or more, ties us at the bend to the five great thoroughfares reaching on far through the heart of the city and the south, and a new broad avenue to the Mail dock will be needed as our ocean trade expands.

Words seem almost needless to show the immense and lasting values of convenience to the people; economies of time and effort, increased efficiency in the conduct of affairs, and the glorious beauties of this central organized plan. Yet it invites a volume.

Notice that Eleventh street for a block is moved along and now comes out opposite Van Ness avenue; Twelfth street, also moved, comes out into Franklin, where a cross-town car line is talked of to connect with our Geary street line. It also fits better with itself on the south, and Eleventh street runs into the driveway of the Union Station. As the city would own each side of both streets, no trouble with private owners would be encountered, and the physical work is well worth doing for the greatly improved convenience to traffic alone.

Across Mission street is more possible now than ever to be located a branch Union Station, where all or most of our railways may land passengers from outlying districts, the nearby cities, the State and the Continent beyond—right into this the city's central vestibule—beautiful, stately and eminently suitable.

Street cars we have on Market, Mission and Valencia streets—several lines each. The Howard street line could be brought in here, and cross-town lines on Polk, Franklin and Gough streets would connect us with others. Now, is this really convenience of access? Is it economy for our organic growth and civic and social activities? Who shall compute it for

us? And the advantages! They are simply staggering to the imagination.

The foregoing is chiefly suggestive only of the great features of convenience and economy in the use of it—the practical side.

After the practical, in importance, comes the beautiful—also of a very high order of importance.

Did you ever realize that suitable genuine noble beauty, in full harmony with the practical which it clothes and elevates, is one of the most valuable, precious and profitable of things known to mankind? Mere words are inadequate here. Yet a volume waits.

We ought to have, and expect to have, a beautiful—perhaps a very beautiful City Hall (and others will follow). It should be suitably stately, noble and dignified, and stand up with a certain grace and grandeur —yet with a sweetness and charm of design, a simple harmony of proportions in outlines and masses, in features, details and in color, that shall please, delight and satisfy our people and our friends over the country and beyond the sea.

If set in the center as shown in the design, it will stand in the range of long superb vistas from far along on all converging streets, some eight or nine in number. (Over twenty streets come in upon the civic center.)

It is true that an open space or plaza in the center, with buildings around it, has a value and a charm of spaciousness all its own; but with a fine open park space around the central monument, various open spaces and gardens near by, and broad streets reaching away in many directions, we have a blend of the beauties of them both, with no especial loss of either, and great and beautiful gains for both and for all.

High in the main front is a 40-foot arch and vaulted acoustic pavilion arranged to throw out a speaker's voice, or the music of a chorus or a grand orchestra, with the sweet and glorious tones of a Tetrazzini or a Nordica, while the listening people to the number of 100,000 or more may gather in front, and in Market street and the proposed Assembly park beyond (while the cars may be run around on other streets); a place greatly needed in our center for great public receptions, festival exercises, grand reviews, etc.

And so, with a well designed and beautiful building rising from a carpet of living green among the waving feathery trees, fronting fair and fine to all the points of view, bearing its central round white domes, and crowned some day with gleaming gold, we shall have a Center worthy of this far-famed queenly City of the Golden Gate.

Let us believe in our destiny and have the courage of our sincere convictions. We are going to have the great exposition when Atlantic and Pacific—the long-separated sister seas shall meet and kiss across Panama—are not our Civic Center and City Hall among the most important things to have in evidence for that great reception to the world?

When great occasions come, or we celebrate important events with uniformed processions and long lines of beautiful floats, with "Old Glory" on the shoulders of a hundred of our noblest sons, here will be the chief rendezvous and the grand wheeling point for many a stately street parade swinging up our great main artery of Market street, then around the four park spaces of City Hall Square, and out along broad Van Ness avenue, to the Exposition while there, or return to the civic center for the final grand review.

And the City Hall, if desired, being exceptionally well lighted, fireproof and permanent, can very suitably contain important departments of the great exposition (built as a shell, omitting much inside work and finish, etc.), saving several temporary fireproof buildings elsewhere. It has been

proposed to the management to install here such features as the central administration offices (branches being at the other groups); public reception rooms for visiting officials and their friends; the women's department (in the crown of the rotunda); education and social economy (if it works out well); certain groups of the fine arts (unless the recent proposition to build the University of California Art Academy on Nob Hill should be successful, and have enough room).

The permanent art museum in the park would be far too small for all the art works likely to come, and foreign nations will not send their best treasures of art unless the utmost safety from fire, risks in handling and other damage is assured.

The civic center might well receive many exhibits of architecture, sculpture, painting, decorative arts, landscape designing, town planning, and a dozen or twenty more; also ceramics, art manufactures, musical instruments, municipal devices (engineering, mechanical and others), building materials and devices, etc. (City Halls is 400 feet long.)

Now, in financing the enterprise, let us make it the chief ruling purpose to secure benefits to all parties concerned and to distribute the cost with a chief regard to the benefits conferred, all as equitably as can be worked out.

First, let us all appeal to the owners of land needed simply for a moderate, consistent square deal, for prices having a due regard for actual market values and an honorable relation to assessed values which are made up with due reference to their own representations. And we will give them a good fair price and sure pay, delivering them from the long and costly waiting of many years of taxes with little or no income, and give besides, our lasting gratitude and honor for the years to come. (Without any civic center, stagnation will continue much the same for many years yet.)

Second, let us say to the holders of property in the district to be benefited by the resulting rise in values, "Will you kindly accept this increase of values on shares with the city which is to produce it?" It costs you nothing; you will not get it at all otherwise, you have no prior claim on it, but you may have it on condition that you enter into contract to pay the city only one-half this resulting increase, annually, to be estimated by the assessor.

This is simply an adaptation of the equitable modern plan of having the chief beneficiaries share in the cost of such public improvements. It is now the vogue in Europe and steadily coming into action in this country. Large owners affected are greatly in favor of it, and why not? This will start business to going as soon as it is decided to do it. But it is now so well known that few if any will care to buy or build till it is settled, unless in harmony with it.

Third, the city, the supervisors, the people: We have little or no money available now, and the taxpayers are burdened nearly to the limit of safe endurance, and many other calls are just ahead; but the old site can and should be sold (except Hall of Records), and bring, in lots to suit buyers, enough to pay about half the cost of land needed. Then, with the conferring of this great benefit the sharing would by degrees take care of the other half, and probably more later on. On this plan the land can be secured.

Fourth, the directors of the exposition, being best organized for action, and having this plan under favorable consideration, have made a first tentative move. All is well for it so far. Now, if others will properly help very

likely the fair management, when they can, will go on and do much of the business, acting as the city's agent or otherwise, and put up buildings for a part of the exposition—their best opportunity for permanent works so much desired. All the cost would come back, and more, probably the grand results be achieved now instead of indefinitely postponed, and millions be saved and gained for all concerned. Why not do it?

Among various objections formerly urged against leaving the old site, to all of which we have good answers, only one seems worth noting here, because a few good men seem disturbed about it.

They fear such a civic center will prevent the extension of business. Well, of course it is true that it will occupy space that some small dealers might some day wish they could get—but for what kind of business? Largely saloons, nickelodeons, cheap picture shops, second-hand stores, etc., such as now fill up a large percentage of upper Market street. But can we not spare a few of these here, or ask them to move on into the newly developing thoroughfares beyond for the sake of having these great public improvements?

Modern "business" is changing. Each residence section now has its own local supply stores, instead of running so often to the main center. Then, the amount of frontage on Market street needed for a given volume of business is much less than formerly by reason of our modern department stores, telephone and mail order business, arcades, second stories, etc. The wholesale district is expanding southward instead of pushing out Market street, and we have several blocks yet to build up before reaching the civic center.

Street cars and autos also tend greatly to diminish trade along such places. So, on the whole, we do not see that we need to give up the civic center for fear of this, nor to pay very excessive prices for these blocks needed.

Advantages of a Radial Auditorium

Following are some of the advantages of a radial auditorium over the common place square type, especially if placed between 10th and 11th streets, as one of the Civic Center group.

1. It holds an immense audience under short span trusses; hence it is much less costly to build for a given large number.

2. The Center part can be built first and so used for a time and will look well.

3. Six Wings can be added later, one or more at a time as wanted, and look well, if properly managed.

4. Any number of wings can be curtained off, so reducing the size to suit smaller audiences of various numbers.

5. The building should have great unusual beauty—it is unique.

6. Besides the grand main entrance there are 42 liberal exits, all short, direct, easy, safe and have inclined floors in place of stairs, even from the galleries.

7. The main aisle is a circle 1-7 of a mile around.

8. By removing certain seats and light partitions, an exhibition track is available (for horse shows, etc.) 45 feet wide and 1-5 mile around.

It is readily adaptable to exhibitions of various kinds.

9. There are numerous spaces well adapted to show "Home Industry" goods, permanently.

10. In ends of wings—first story—under where main seating runs up high (to give all seats a clear view of the stage) there are fine places for a

large, unique restaurant, a picture theatre and various stores, shops and offices, besides numerous storage spaces, etc.

It calls for just such a block as shown. The blocks north of Market street are not large enough.

Seating—each seat with a clear view of the central stage.

Center Part—6600; each wing 2600 x 6=15,600.

Each Gallery—1450 x 6=8,700; Total 30,900 (or more).

The Central Stage gives far better nearness to the entire vast audience than any other location, and excellent hearing for music to all parts of the house, or a speaker's stand can be placed anywhere desired.

For addresses, some speakers would make themselves understood fairly well and devices for the improvement of hearing can probably be installed; but the majority of gatherings would not require all the wings to be open to the central rotunda

Many of the greatest cathedrals do not provide perfect hearing or even a clear view to all auditors.

The capacity of St. Peter's at Rome is 54,000 people. The size of audiences in San Francisco distinctly tends to grow. In Berlin they have now an immense auditorium with a central stage (so we are told).

With all the above great facts it is not claimed that the most perfect hearing to be desired can as yet be insured throughout. But the advantages that are clear are so important and so valuable for San Francisco and the exposition that we feel it a duty to offer them here.

Then, above and beyond this, we venture the hope that if the proper course be followed suitable devices for the improvement of hearing can be found by the time they are most needed.

Several inventions now in use, designed for other purposes, come very near to suiting this purpose, but flaws are found in their application.

In the field of sound we have many modern devices overcoming greater difficulties apparently, such as the wireless telegraph and telephone, the acousticon, the dictograph and others; but only a limited amount of inventive attention has been applied to extended hearing in extra large auditoriums.

It is well demonstrated that sound can be reflected, can be conducted, can be gathered and magnified, and can be electrically transmitted. Let us appeal to inventors to study this especial need and try to give us, for the people's better welfare, this improved hearing so much desired and so vitally useful. Rewards will surely follow. Great meetings of the people, in tens of thousands, are steadily increasing in frequency and importance, even though hindered by lack of facilities. Witness the vast crowds who gather to hear our popular speakers on live issues. Our political candidates often travel to three, four and five places for one address in effect. Also note the numerous great conventions, etc.

Think what it will mean to San Francisco to gather 30,000 to 35,000 people within a building to hear a Tetrazzini sing, and all see and hear her well!

EDITOR'S NOTE—By an oversight the plan of Auditorium was omitted but will appear in a future issue of this magazine.

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* *

Not Such a Bad Idea

"His wife is a business woman, all right."

"What makes you say that?"

"She's installed a time-clock in the hall and he has to punch it when he goes out nights and when he gets back."—Detroit Free Press.

Design for a Pavilion in a Public Park
Robert Maxwell Cassidy

The Los Angeles Architectural Club

By GILBERT STANLEY UNDERWOOD.

ABOUT five years ago the Los Angeles Architectural Club was organized at a rather scantily attended meeting, in the old Y. M. C. A. building on Hill street. It was to Mr. Bert Crowder that most of the success of the movement was due, and in appreciation of his efforts the twenty-two members comprising the club elected him the first president.

The committee on the constitution and by-laws in the first article stated that the club should stand for "the study and promotion of architecture and the allied arts, and the bringing together into social relations of those interested in this object." The study and promotion of the social relations was most successfully carried forward, but the subject of architecture received little encouragement in the early days. The small classes formed soon died out through lack of attendance, and class nights were more often devoted to smokers and jollifications. Next to his art, a draughtsman loves his pipe, and some say that the old clubroom—singular, mind you—in the Tajo building at First and Broadway still retains the perfume of more or less fragrant tobacco.

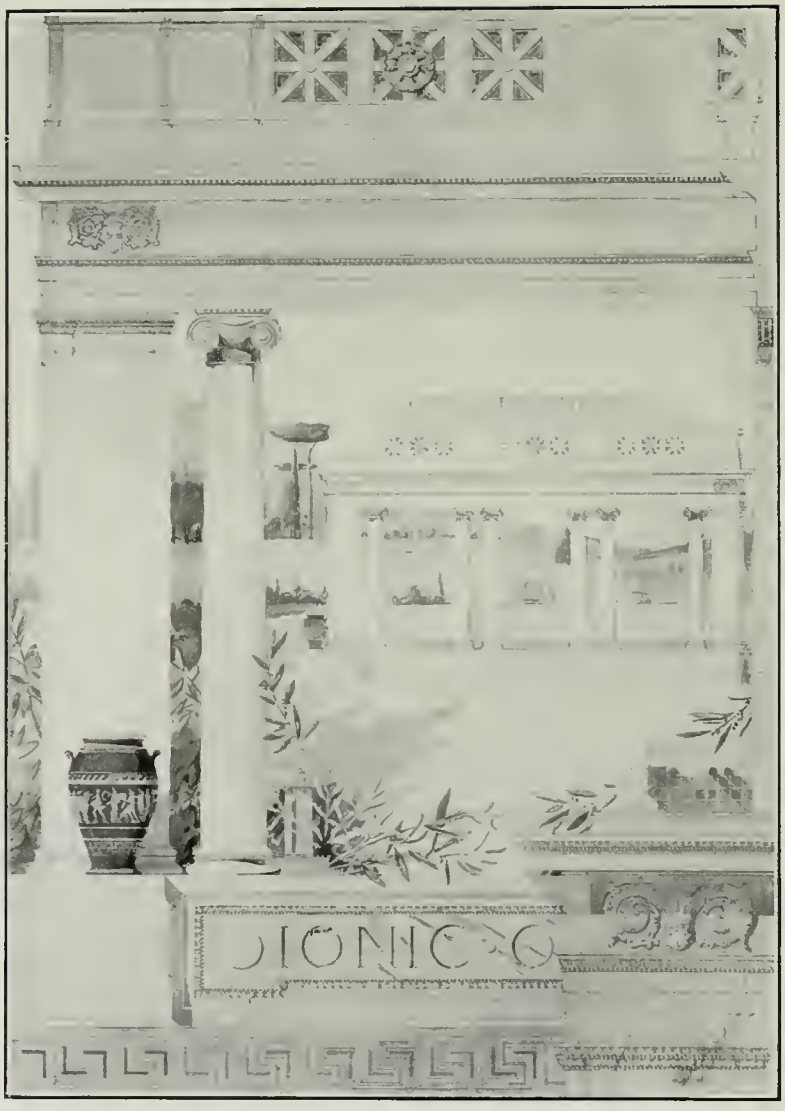
Some of the practicing architects in the city were kind enough to give a few lectures and talks on different branches of the profession, and once in a while a stray traveler would add his views to the discussions.

After a year's residence in their first quarters the club moved to more comfortable rooms in the old Nash building on Spring street. The new clubrooms were shared jointly with the Arts and Crafts Society. Henry F. Withey was elected president, and Albert R. Walker, secretary. For three years the club struggled along, with no exceptional success, until the membership crept up to sixty in number; and out of the sixty there developed enough hope and enthusiasm to cause the live members of the club to adopt a change in policy. In 1909 the first determined campaign for members was launched at an enthusiastically attended meeting in Blanchard hall. The club had formerly been composed of draughtsmen only. Architects were solicited for membership, and Alfred F. Rosenheim was elected president. With this new influx of members the affairs of the association went ahead in a more encouraging manner.

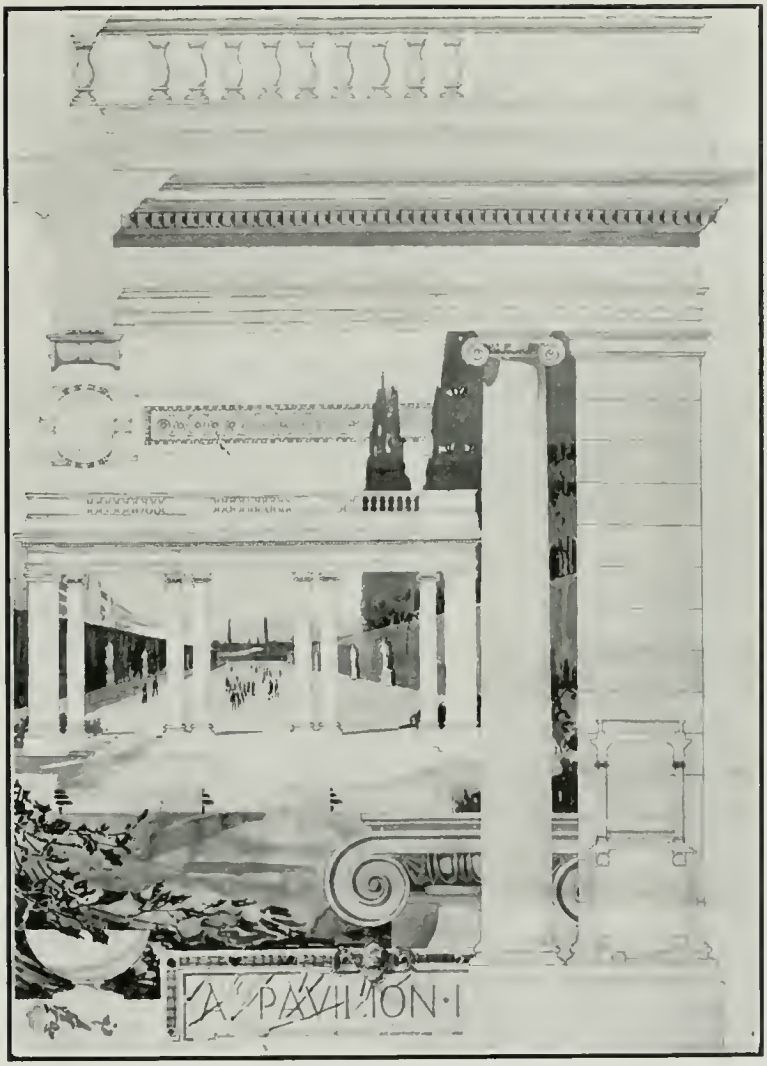
Now that the club was firmly established the members felt safe in bettering their condition, and forthwith new clubrooms were prepared in the Union Trust building at Fourth and Spring streets, fourteen stories above the dust and noise of the city streets.

Two architectural exhibitions had been held in the Nash building, and in January of 1910 another and by far the largest and most successful exhibition of all was held in the Hamburger building.

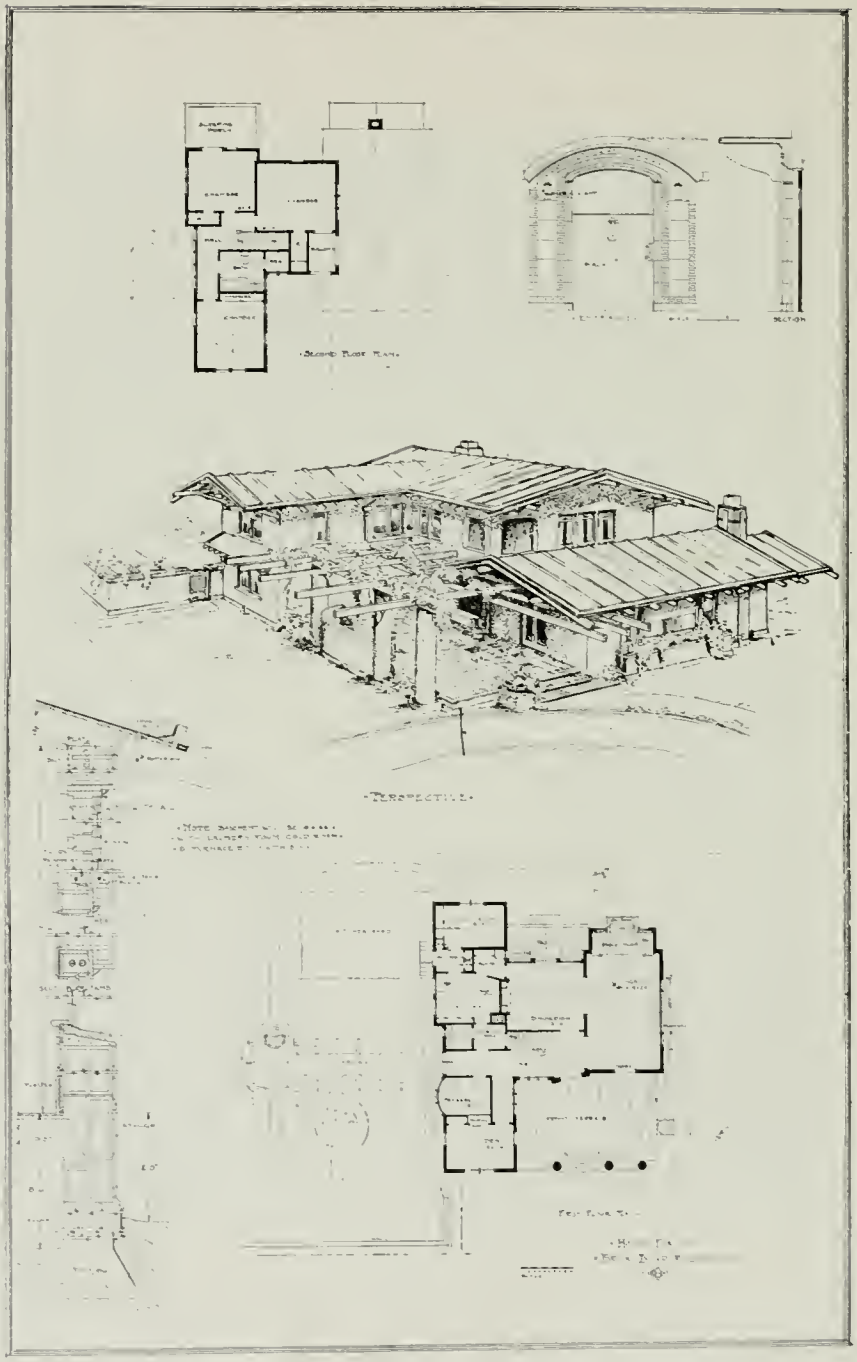
The class work had by this time become somewhat organized, and work in the problems of the Society of Beau Arts Architects was attempted



Design for a Pavilion in a Public Park
Gilbert Stanley Underwood



Design for a Pavilion in a Public Park
John F. Murray



Design Submitted in Brickbuilder Competition, by Alfred Cassidy

by some of the more advanced students. On Saturday afternoons the ambitious members of the club banded themselves together and—sometimes with and sometimes without an instructor—traveled into the country on sketching tours, and some talent developed. A few of the former members of these sketching parties are now successful renderers in colors and in pen and ink, and who shall say that this sketching, irregular and untutored though it was, was not largely responsible for their success.

In the short space of a year and a half the membership has grown to 250 members in good standing.

The fourth exhibition was held in January of 1911, the entire top story of one of the large loft buildings being devoted to the display of not only architectural drawings alone, but studies from life and from nature, works in clay and stone, and even a model in wood of the Arlington Hotel of Santa Barbara, by Arthur B. Benton. Ranking almost with the art display, the exhibit of an architect's working library was a prominent part of the show, and the exhibit of architectural materials and inventions was one of the interesting features.

Another move has been made, the entire third floor of the Johnson building on Spring street being devoted to the use of the Architectural Club exclusively. The dream of the founders has grown to a reality.

Of the class work much might be said. Nineteen eleven saw the start of the most enthusiastic and largest attended classes in the history of the club. In the class in design, more new and younger members were initiated into the mysteries of design and rendering than ever before, and it is certain that many learned more French architectural terms than they knew ever before existed. A goodly part of the success of the atelier may be credited directly to the patron, Mr. D. C. Allison, whose patient and untiring efforts to assist in the prosperity of the class never ceased during the term.

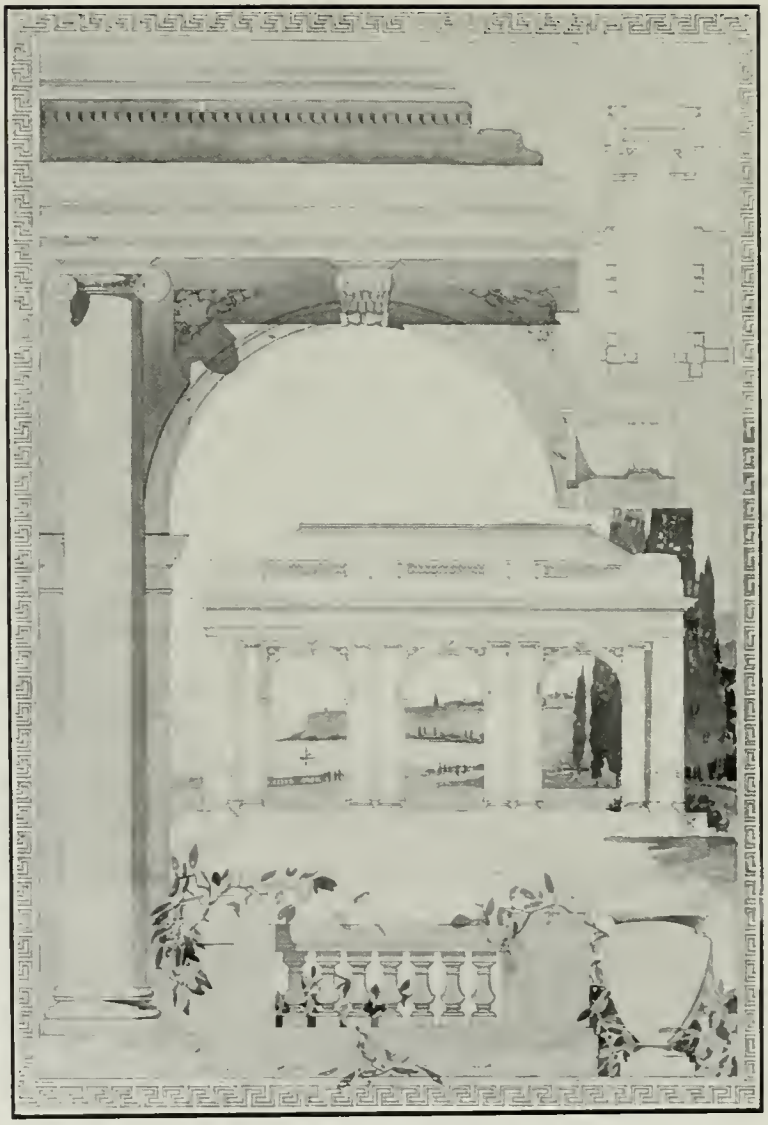
Most of the problems shown are the work of first-year pupils, and the standard is equal to any of the Eastern ateliers. During the summer months the atelier work is abandoned, the members devoting their time to the class in outdoor sketching. The atelier work for the coming season will be started in September, with Mr. Allison as patron.

The sketch class has prospered under the combined instruction of Mr. John T. Vawter and Mr. Arthur Roland Kelly. Trips are made to different parts of the surrounding country; and where can one find "stuff" to sketch in more plentitude than in Southern California! Some work is done in water colors and oil, though most of the students confine themselves to that very subtle medium, the pencil.

Mr. Vawter gave the class in engineering its initial start for the year. Under his very capable guidance the class was led through simple mechanics into work in the calculation of stresses, etc. From this point the work was taken up by Mr. Albert C. Martin, who at present is engaged with the class in the study of reinforced concrete. At the finish of this part of the course Mr. Henry E. Bean will teach the science of steel construction.

The life class, which was first formed in the old quarters in the Union Trust building under the direction of Mr. Piexiotto, whose unfortunate death occurred a few months later, was carried on by Mr. Brown, now in Europe. The third and present patron of the class is Mr. Chas. P. Austin, whose class numbers about twenty-five members.

Plans are now on foot to inaugurate a class in sheet metal and in stereotomy, though it is probable that such will not materialize this year.



Design for a Pavilion in a Public Park
Dwight G. Wallace

Sketch by Kenneth Kellog

In the development of the educational part of the society the social side has not been neglected. The regular business meeting each month after the disposal of routine affairs is devoted to social enjoyment. Prominent men in the profession speak on different subjects of interest to the members, and discussions of interesting topics among the members themselves take place. Travelers and educators passing through the city respond most readily to invitations from the club to discourse on foreign travel, etc. At present there is being carried on from month to month a discussion by different college men on "The Influence of a College Training on the Architectural Student." This series of talks has proved a most interesting one to the members. Each meeting ends with an informal banquet where good fellowship reigns supreme, and tracers rub elbows with Fellows of the Institute.

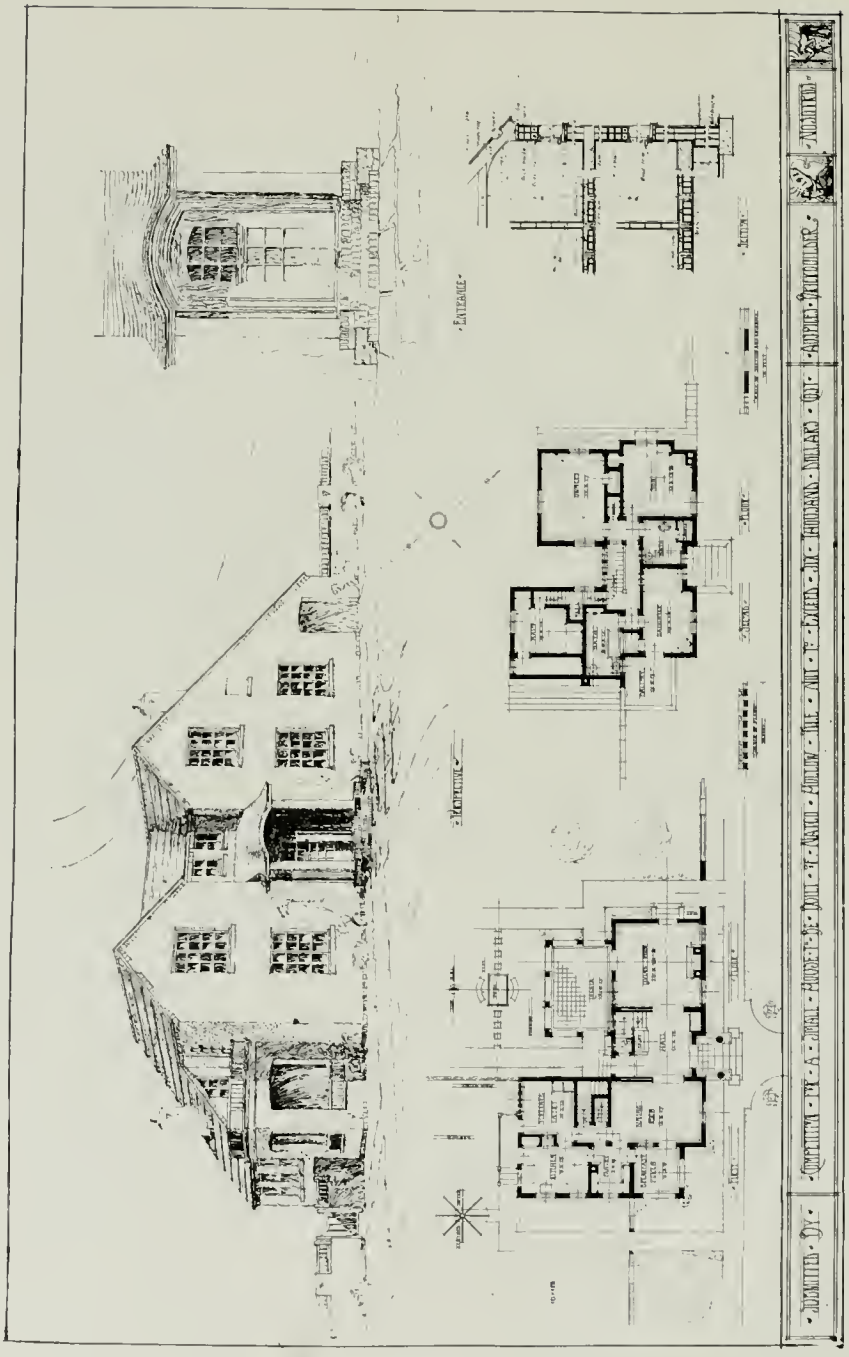
The class committee plans more extended work in the different branches of the educational department.

The entertainment committee plans for a larger social development.

The dramatic society plans to produce a few local plays during the coming season.

The house committee plans for better furnished quarters, a larger and more comprehensive library, a more convenient atelier and a stage and dressing-rooms for the dramatists. And this is taking place now. Extensive alterations have been commenced toward making the clubrooms the most comfortable and commodious in the city.

Whether the success of the club is due to one influence altogether is doubtful. Certain it is that the young men, with their enthusiasm and



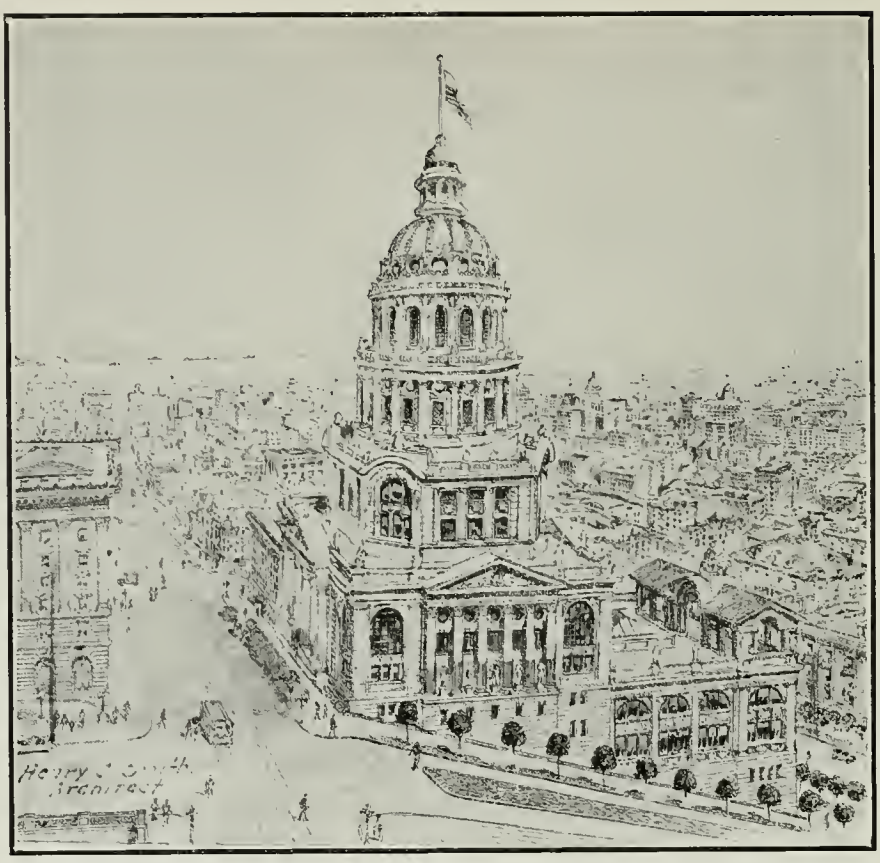
Design Submitted in Brickbuilder Competition, by Gilbert S. Underwood and Robert M. Cassidy

Life Study by George N. Alson

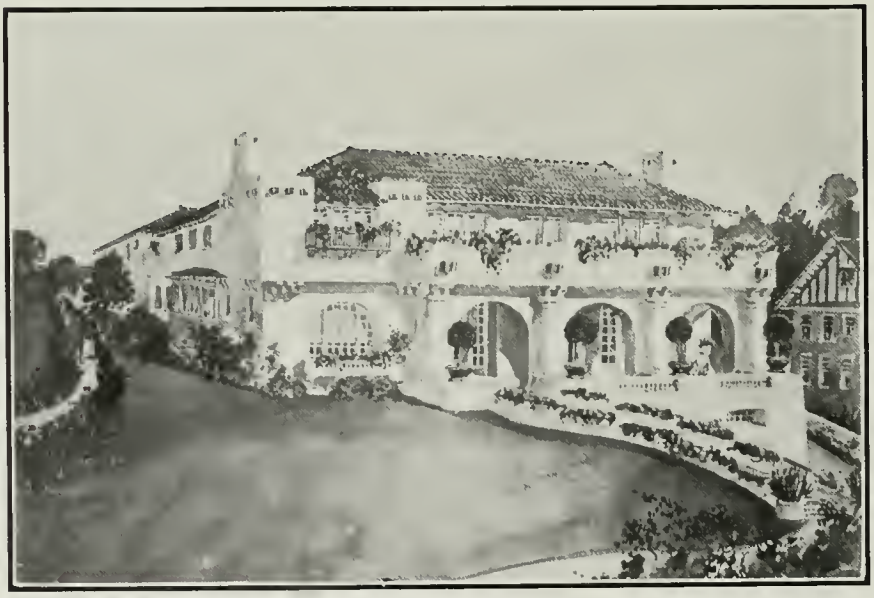
ambition, have largely helped to place the club on its present high plane. And the loyalty of the architects and older members has been another equally potent factor in the upbuilding of the association.

Of the future, I need but to say that the Los Angeles Architectural Club is an assured success and a useful and necessary institution in the architectural affairs of the city. Its development in four short years from a membership of twenty-two to two hundred and fifty, and from a band of pipe-loving draughtsmen in a twelve by fourteen room to a prosperous, live, working association in quarters fit for the finest, is sufficient guarantee for the future.

Myron Hunt is president, Frank Schaeffer is vice-president, and Henry Edgar Bean is secretary and treasurer.



Sketch for a Permanent Museum and Art Gallery to be Built on Nob Hill, San Francisco, Entirely of California Materials, at an Estimated Cost of $1,500,000
Henry C. Smith, Architect



Design for a San Francisco Residence in Presidio Terrace
Henry C. Smith, Architect

Copyright in Architecture

The question of copyrighting plans and specifications of a building is agitating the profession in Europe, and the matter hos gone so far as to be debated in the House of Commons. It is unquestionably a live subject and one that is likely to receive the attention of the American Institute at its forthcoming session in Washington. Very recently a case involving the copyright question came up in a Paris court when it was asked to decide the controverted copyright of a house.

It appears that an architect at Boulogne-sur-Seine had erected several apartment houses on a plot of ground belonging to him and had devised an original facade of colored bricks. He at least considered it original, for when the houses were completed he had a plate with an inscription placed on the walls to the effect that the facade of the houses was his copyright, and imitations were prohibited.

Seeing a building in Paris some time afterward which had just been completed, the architect thought that the facade, which also was of colored bricks, was an imitation of his own. He began a law suit against the owner and the architect for infringement of the copyright laws, but soon afterward he died. His heirs continued the law suit, which has now been decided by the court.

Three experts were called. They agreed that the facade of the houses at Boulogne-sur-Seine was peculiar and might even be allowed the protection of the copyright laws, but on the other hand the house built in Paris was equally original and there was no proof that it had been copied from the others. The architect, or rather his heirs, therefore lost the case.

The following editorial on "Coypright in Architecture," appeared in a recent issue of the London Times:

THE clause in the Copyright Bill which creates a copyright in architecture was the subject of an interesting debate in the House of Commons recently, in the course of which strong arguments were advanced on both sides. It was pointed out by Mr. Joynson-Hicks that there has never been any kind of copyright, or indeed any kind of recognition, of an architect's exclusive right to his own ideas in any of the great ages of architecture. Indeed, architecture grew in those ages by the universal practice of what we should call plagiarism. Gothic architecture developed with such rapidity in France just because every builder made it his aim, not to be original, but to improve on the work of former builders. This is true enough, but we have to remember that all the circumstances and conditions of the art were different then than now. The architect hardly existed; at least, he was not recognized as an independent artist. He was rather the chief of the masons in the employment, often permanent, of some great religious or civic corporation, which probably paid him wages like any other workman. Therefore, provided he kept his employment, it did not matter to him how much his work was copied. But the architect now is in a very different position. He is a professional man usually paid by the piece, and paid particularly for his invention, like a modern painter or novelist. It is difficult to see why he should not have the protection they receive, if it can be given to him; for nowadays an architect can get a reputation, and so unfairly compete with other architects, by merely copying their designs, since the more he copies and the less he invents for himself the more work he can do. While they are spending time and energy upon their own designs, he is economizing both by stealing the designs of others. In fact, he is thriving by theft, and it is only just that the law should prevent him from gaining a dishonest livelihood if it can.

Thefts of this kind are not likely to advance the art; and the solicitor-general tells us that the clause is only directed against them. The question, therefore, is whether it can prevent them without causing a great deal of troublesome and costly litigation. In its wording it extends copyright to "the construction of architectural works of art." The solicitor-general admitted that it was not easy in every case to say whether a piece of archi-

tecture was artistic, but that, he contended, was a difficulty inherent in the law of copyright. But it is a difficulty that applies more to architecture than to pictures or music or plays; since the purpose of these is always supposed to be mainly artistic, whereas architecture has a practical purpose of equal importance. The common notion, which is likely to be shared by judges, is that architecture is artistic only in its ornament, whereas it may be quite plain and yet a great work of art by reason of the expression of its uses in its structure. A judge might mistake a masterpiece of this kind for a work of pure utility; and he could not make such a mistake about a picture or a play, for they have no useful purpose. The solicitor general added that the difficulty of applying the law fell upon the architect, and that in his opinion the architect would very rarely be able to apply it.

One might say that, in that case, the clause is worthless; but really it may have considerable prohibitive value. We have to remember that already it is against the law for one architect to copy the plans of another; the new clause only makes it illegal for him to copy the actual building by means of photographs or other devices. And since a trained architect can easily make a plan from a photograph, it would be inconsistent to prohibit one means of plagiarism and not the other. The solicitor-general admitted frankly that the clause was an experiment that might not produce any results at all. But if not a single action is ever founded on it, it is not therefore to be condemned as futile; for the fear of it may teach honesty to the dishonest. The worst it can do is to encourage unprofitable litigation; but the professional feeling of architects is likely to prevent that. We may expect that action will be taken in flagrant cases, if they occur, by architectural bodies rather than by individuals; and a few such actions, if successful, will probably put an end to dishonest practices. Nor is the fear of litigation likely to hamper any architect of original powers. He will not take photographs or elaborate notes of other architects' buildings for purposes of plagiarism; and in case of chance resemblance between a building of his own and a building of some other architect he will be able to prove that the resemblance is chance. The law in France and Germany is already what this clause will make it in England, and it appears to have aroused no complaints in those countries.

* * *

Why a Granite Statue was Rejected

THERE has frequently been comment on the naivete often revealed by the ancient artists and stone carvers. There is not a Gothic cathedral but furnishes ludicrous examples, and paintings are treasured in the old churches that would call out nothing but laughter were it not for the earnestness and childlike devotion of the artists. One scarcely expects to see this same delightful naivete in modern work, but an instance is furnished by a recent granite job at Barre, Vt. A few weeks ago there was completed at one of the sheds on an order from a woman at Buffalo, N. Y., a life-sized statue in granite of the Virgin and child. The work was shipped, but was returned, as the woman who gave the commission objected to the Van Dyke beard on the child in the arms of the Virgin. The reason for a beard and mustache on the Christ child is not known, and the head of the firm would say nothing on the subject. It was rumored, however, that the firm received the order for a statue of the Virgin with the Christ child in her arms, and workmen carved the face of the Christ as they had seen it in pictures, with a full beard, although the body is that of an infant. The statue is of excellent workmanship and worth in the vicinity of $1000, but it will probably take a little work with a chisel on the beard before a ready purchaser is found.

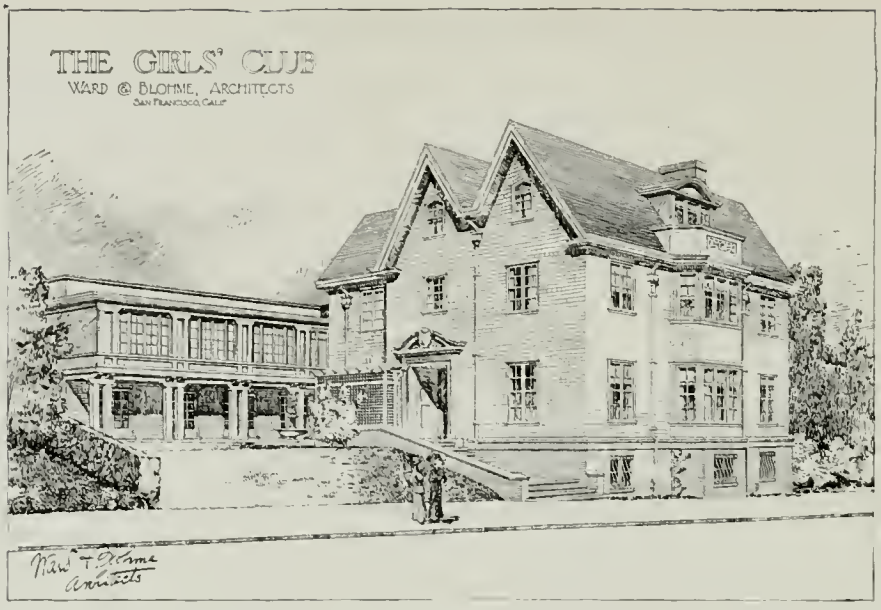
Architectural Terra Cotta

IN AN Architectural League exhibition, about fifteen years ago, a small store front of highly colored terra cotta erected against one wall of the Vanderbilt gallery aroused general interest in that it represented about the first tentative effort to impress upon the architects and the public the possibilities of this interesting material for exterior design.

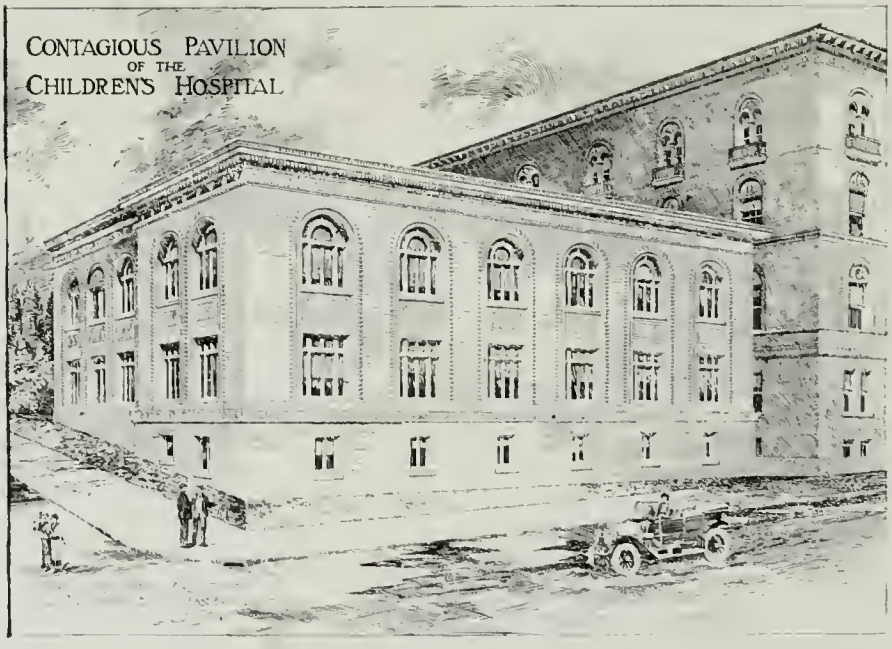
More than ten years later the Madison Square Presbyterian church was begun, and this may be said to be the first notable example of the use of polychrome terra cotta throughout all portions of the exterior of an important building. During this interval and for some time previous there had been evident a steadily increasing interest in the texture and color of the various materials employed in the execution of exterior design, and a better understanding of the interrelation of color and texture. The soft gray tones of unpainted shingles, the intersecting sparkle of rubble walls built of discolored and moss-grown field stone, the subtle suggestion of pattern due to the presence of black headers in rough brick walls with wide joints, all testified increasingly to the desire for color united with agreeable texture, and helped to make general an appreciation of the fact that strong color contrasts must be united with agreeable textural quality in order to be architecturally acceptable.

This period was rendered notable for the purposes of this discussion by the newly-built museum of the University of Pennsylvania, a building which perhaps illustrates better than any other example that we have, how vigorously color contrasts may be used for the enrichment of our facades without destroying the necessary repose, by combining and surrounding them with carefully studied surface textures. Furthermore, as an example of the color effect that may be obtained by carefully studied surface texture without the introduction of any definite color treatment, we have the University Club of New York, a building, I believe, unequaled in this respect. As a preliminary, then, to the introduction of large masses of glazed and colored terra cotta upon the facades of buildings, public taste may be said to have developed to the point of realizing the futility of the effort to introduce color interests into architecture by such expedients as the introduction of panels of tile mosaic in the midst of great surfaces of the traditional Philadelphia brick, or other material equally uninteresting in texture, a characteristic of a certain period of our architecture which fortunately was a brief one.

I have referred above to the Madison Square Presbyterian church as the first notable example in this country of the use of polychrome terra cotta in exterior design. In view of this fact and also of the prominence of the location of this building, it is, I think, most fortunate that the color has been applied with great reserve—so much so, in fact, that to one observing this building from a sufficient distance to grasp the effect of the entire composition on a bright day the color variation merely serves to impart a slight vibrant golden glow to the prevailing creamy tone of the building without in the least diminishing the quietness of the shade and shadow; but on a gray, overcast day, when the building is seen in diffused light, the detailed interest of the color treatment immediately becomes apparent, and thus substitutes another and different kind of interest to compensate for the loss of the shadow forms. In this respect it seems to me that this building is deserving of the highest praise, and it is, I believe, destined to exercise a most salutary influence in restraining those whose fondness for color contrast might easily lead them to the other extreme.—J. Monroe Hewlett in the Brickbuilder.



Pen and Ink Sketch of Girls' Club Building, San Francisco, California
Ward & Blohme, Architects



Contagious Pavilion of the Children's Hospital, San Francisco, California
Ward & Blohme, Architects

Two of Ward & Blohme's Buildings

The two buildings illustrated on the opposite page were designed by Architects Ward and Blohme of San Francisco. One is a contagious pavilion for the Children's Hospital and the other is the new home of the Girls' Club on Capp street. The former is a two-story and basement brick, steel and concrete fireproof structure, containing four separate contagious compartments each with a separate entrance. The floors will be of cork carpet, the walls of hard plaster and the entire interior finish will be finished in germ proof enamels. The building is arranged so it may be thoroughly fumigated or disinfected. A future glass sun room on the roof is provided for.

The building will be erected with the W. R. Hearst fund which was collected in the East for the fire refugees and afterwards having been found unnecessary, was turned over to this institution. The total cost will be $50,000.

The Girls' Club building is to be a two-story, basement and attic brick and frame structure. The rear portion or Assembly Hall is of frame construction and is connected to the main building by means of corridors and court. The building will have about thirty rooms, consisting of shower rooms, lavatories, work rooms, class rooms, reception halls, parlors, library, kitchens, dining rooms and class kitchens for teaching cooking.

The exterior of the building will be of cedar shingles. There will be an Italian sunken garden or court in the space between the assembly hall and main building. Basement walls are to be of klinker brick trimmed with sandstone. The structure is expected to be the most complete for this purpose in the West and marks a long stride in settlement work. The cost of the building when completed will be in the neighborhood of $20,000.

* * *

Paris Objects to the Skyscraper

ARTISTIC Paris is up in arms against the skyscraper. Industrial progress demands loftier and roomier stores, hotels and warehouses; the defenders of art claim that the treasures of the old world—the churches, palaces, squares and classic designs of architecture—are in danger of being ruined by the space-economizing structures of the new.

The true Parisian deplores the advent of change. He feels that his city is infinitely superior to anything that can be introduced from America. He declares streets like the Rue de Rivoli, avenues like the Champs Elysees, squares like the Place Vendome and the Place de la Concorde are inimitable, and to interfere in the least with their proportions would be to destroy the harmony of their lines forever.

It is an extremely delicate and dangerous matter to modernize a city like Paris, and yet it is clear that a deadly struggle is being ceaselessly waged by the new against the old, as the elbow room becomes less and the value of the ground greater. There is only one way out of the difficulty and that is skyward. Americans long since discovered this and the "skyscraper" is the solution they offer to the French.

But while the Parisian sympathizes with the storekeeper anxious to enlarge his premises, he declares such a solution is clearly impossible for Paris, for it would quickly destroy the characteristics which are the pride of the city.

* * *

"What's the matter, daughter?" "Ferdy and I have parted forever." "Um. In that case, I s'pose he won't be around for a couple of nights."—

Aubury Continues Crusade for California Materials

STATE Mineralogist Aubury has written a scathing letter to the Secretary of the Treasury, in which he arraigns the supervising architect of the Treasury Department, J. K. Taylor, and from plans and specifications prepared by Taylor, shows that charges of discrimination against California are sustained by official records of the supervising architect's office.

The communication to the Secretary of the Treasury is long and circumstantial. At the outset Aubury claims that the supervising architect has stood in his way in getting access to the plans and specifications, and gives the text of a letter signed by Taylor, under date of March 30, 1911, in which Taylor denies the State Mineralogist's request to be permitted to inspect the records. These words are quoted from Taylor's letter to Aubury: "For a number of years you have been accusing this office of discrimination against California products in the construction of public buildings in that State. The present is a good time for you to substantiate them or withdraw them. Until you shall have produced some basis for your accusations more tangible than mere assertions, this office feels justified in doubting your good faith in the matter, and deems it inadvisable to comply with your request."

Aubury did not give up at this rebuff, but continued to seek for a chance to view the plans and specifications, and finally secured it, and having made an inspection of them, supplies extracts from the official records, which are given in extenso to the Secretary of the Treasury.

Incidental to the communication, Aubury wrote to the Secretary of the Treasury as follows: "I now renew my charge that the supervising architect has discriminated against California; that, notwithstanding that he alleges that he cannot select any stone for use in the construction of a public building, I aver that he does specify stones and other materials that can be derived only from particular places and, to substantiate this averment, I call attention to the wording of plans and specifications as given hereafter in this letter.

"I charge that the practice of such discriminations is not limited to any particular instance, but that, so far as official records, prepared under his direction show, he has adopted a systematic discrimination. In justification of this charge I appeal to the records, as manifested in extracts that follow:

"I ask that all such discriminations shall cease, not only because of the financial loss entailed by such discriminations, in any particular instance or set of instances, but also because such discriminations officially discredit the claims of this State in regards to its structural materials that are found in vast quantities within its borders. I also ask, in behalf of this State, that the supervising architect, if the existing order promulgated by Hon. J. G. Carlisle, as Secretary of the Treasury, is insufficient to restrain him, shall be specifically instructed, so that he cannot misconstrue, evade or quibble with words that are intended to prevent a recurrence or recurrences of the offenses of which his own records show him to have been guilty in repeated instances."

This is followed up with extracts from plans and specifications in which it is shown that the supervising architect specified building materials to be used in the construction of buildings, and that the materials were in many instances such as are not produced in California. The buildings mentioned are the following: Santa Cruz postoffice, Oakland postoffice, San Diego postoffice, Stockton postoffice, Fresno postoffice and courthouse, and San Francisco postoffice and courthouse.

In conclusion, Aubury wrote to the Secretary of the Treasury: "I believe that the above data will prove sufficient to substantiate the charges made by me, some time since, that the supervising architect of the Treasury Department, in drawing plans and specifications for Government buildings in this State has not only been guilty of discriminations against California building stones, but also of a direct disobedience of orders as outlined in a letter by Hon. J. G. Carlisle, as Secretary of the Treasury. There are other buildings in California concerning which I have been unable, as yet, to secure the facts that I desire. However, I am contented to consider this a justification of the charges made by me."

As to the charges of discrimination alleged by Aubury, there is no better evidence to support them than the buildings themselves. An inspection of the following Government buildings erected in California, and the building stones with which they are constructed, fully support the State Mineralogist in his contention. Some of the buildings noted are:

Santa Cruz Postoffice—Exterior, Kyune (Utah) sandstone; interior, Vermont and Tennessee marble.

Oakland Postoffice—Exterior, Kyune (Utah) sandstone; interior, Vermont and Tennessee marble.

San Diego Postoffice and Custom House—Interior, Vermont marble.

Stockton Postoffice—Exterior, Kyune (Utah) sandsone; interior, Vermont, Georgia and Tennessee marble.

Fresno Postoffice—Exterior stone work, Bedford (Indiana) limestone, eastern gray facing brick; interior, Vermont and Tennessee marble.

Sacramento Postoffice and Courthouse—Exterior, Arizona sandstone; interior, Vermont marble.

San Francisco Postoffice and Courthouse—Interior, Vermont, Tennessee, Italian, African and Belgian marbles.

Los Angeles Postoffice and Courthouse—Exterior, Arizona sandstone; interior, Vermont and Italian marbles.

Santa Rosa Postoffice—Exterior, stone base, Bedford (Indiana) sandstone; roof, "Spanish" tile from St. Louis, Mo.; interior, Vermont marble.

* * *

A Concrete House Dream

"Your concrete house proposition amuses me more than anything I have seen in America," said W. W. Dunwood, of Manchester, England, according to the Retail Lumberman.

"Now you propose to build a mold of metal and duplicate all of the houses from the original mold. What a jolly looking country you will soon have. The railway trust, I can see, for example, will in time buy a depot mold and it will turn out a hundred thousand depots and plant them around the States. They will all be precisely alike.

"Then you will have contracting firms which own molds for special houses. All the seven-room houses in all the States will be the same.

"This might not appeal to the Italian or the Frenchman as extremely artistic, but I can see an advantage. When a man lives in a seven-room house in Indiana and suddenly switches out to California he will feel quite at home, and his furniture will fit, and possibly even the house cat will think it her old Indiana homestead, and not even bother to return to her native State.

"All your barns, garages, municipal buildings, postoffices, jails, etc., I suppose, will be all alike. The idea is delightful and thoroughly American and original.

"It will save visitors from Europe lots of trouble. They can visit only one city, and when they return home they can safely talk about any American city which comes up for discussion."

Failure of Wire Glass from Exposure by Fire Within a Building. Note Satisfactory Condition of Metal Frames, and that Glass Alone Failed

Another View Showing Effect of Exposure of Wire Glass Windows from Fire Inside Building

Failure of Wire Glass to Resist Severe Heat

THE photographs reproduced here show the effect of intense heat on wire glass windows, and disprove the claim of wire glass manufacturers that their material will withstand almost any amount of heat. The results as shown in the photograps fully substantiate the fire protection engineer's opinion that wired glass is good only for moderate expanse. The photographs are reproduced from the last quarterly report of the National Fire Protection Association, of Boston, Mass.

New Union High School Building, San Mateo, California
Hawens & Tockbe, Architects

Assembly Hall, Union High School Building, San Mateo, California
Havens & Toepke, Architects

Some Features of the San Mateo Union High School Building

THE following graceful compliment is paid California architecture by the School Board Journal, the representative organ of the public school interests in the United States.

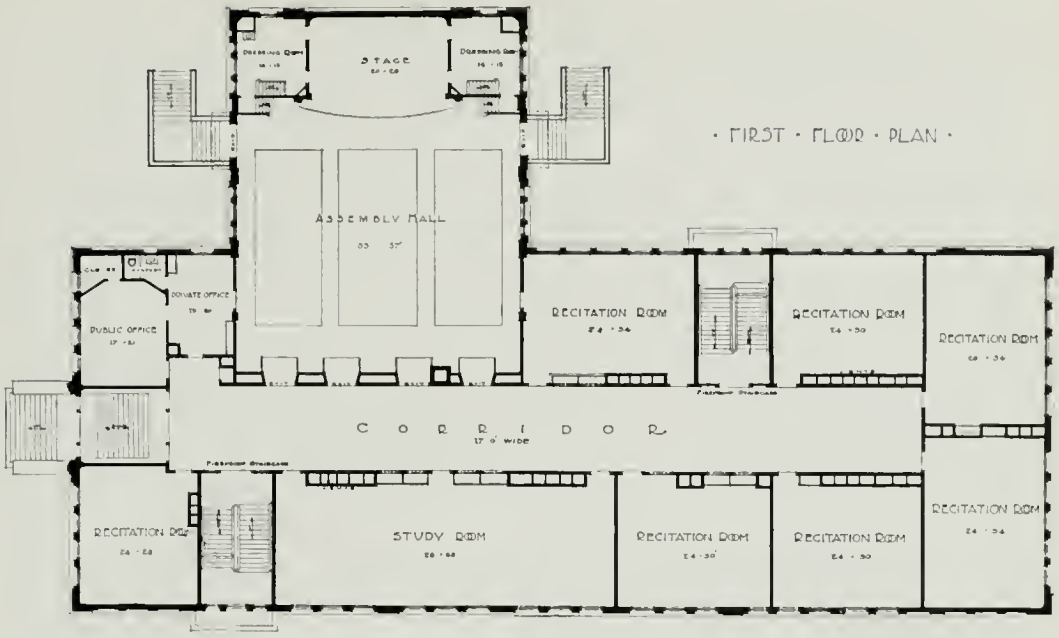
"The assertion that the personality of a people is reflected in their architecture can be applied to no section of the United States with more force than to California. The great variety in styles in that State, ranging from the classic to the mission and the oriental, is clearly indicative of the cosmopolitan diversity of its population. The originality and boldness in form and structure of recent buildings expresses very well the energy and strong initiative of the Californians. New schoolhouses erected in the State during recent years include examples clearly indicative, not only of the uses to which the buildings are to be put, but also of California progressiveness in education.

"The new Union high school at San Mateo is a good type of the classic architecture of the State. It provides an ideal home for a school of five hundred students devoting themselves to academic, scientific, business and manual arts courses. It is, in fine, a complete building offering complete courses of study such as are found in the best schools of the large cities.

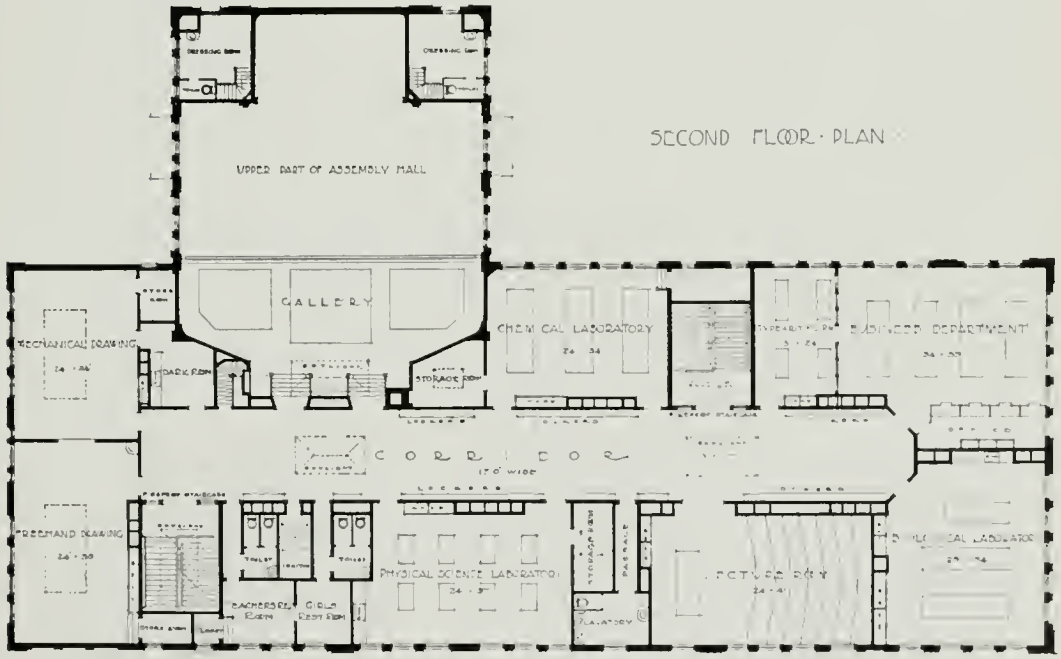
"The school has been designed to meet in the fullest the possibilities of a deep lot with a narrow street front. The placing of the building and the arrangement of the assembly hall, entrances and stairways have all been carefully studied for the widest and most convenient use on the part of the school and the public.

Typical Recitation Room, Union High School Building, San Mateo, California
Havens & Toepke, Architects

School Board Room (Principal's Office Beyond), Union High School Building, San Mateo, California
Havens & Toepke, Architects



First Floor Plan, Union High School Building, San Mateo, California
Havens & Toepke, Architects



Second Floor Plan, Union High School Building, San Mateo, California
Havens & Toepke, Architects

"The basement contains shops for manual training and domestic science fully equipped for full four-year courses in manual arts.

"The heating system consists of an indirect steam plant. The multivane fan, which forces the air through the steam coils in the plenum chamber, is capable of delivering 45,000 cubic feet of air per hour. The system cost, complete, $11,000.

"The first floor has, in addition to seven recitation rooms, a large study hall capable of seating at present the entire school. The public office to the left of the main entrance is used as a meeting place for the school board. It contains the master program clock and the automatic exchange for the intercommunicating telephone system. Just beyond this room is a private office for the principal.

"The assembly hall is 55 by 57 feet in size and has a total seating capacity of 500. It has six double exit-doors, to the main corridor, and two additional exits leading directly into the open. The stage is fully equipped with a drop curtain and scenery and four dressing rooms. The lighting is very complete and has been planned to meet the needs of dramatic performances.

"The second floor is given over almost entirely to laboratories and special rooms. The business department consists of a large room in which accounting and business practice are taught. It is fitted with special desks and office furniture so that all operations can be carried on as in a counting room. The typewriting class is separated from the larger room by a glass partition so that it may be supervised by one teacher.

"The exterior walls of the building are of reinforced concrete. The staircases are of iron and cement and are enclosed in concrete walls. The ceilings and walls all have metal lath and three coats of hard plaster. The wood trim is Oregon pine in natural finish and the floors are of the same material insulated with a sound deadener.

"The cost of the building, not including the equipment, is $100,000 or about 14 cents per cubic foot. Complete with furniture, the school cost $230 per pupil."

* * *

Will Break up the Water Front Pool

FOR several years the existence of a water front pool in San Francisco has been common knowledge. This pool has been notoriously bold in its operations, having enjoyed the tolerance and protection of certain officials of previous administrations. It made no difference who got the contract since all the bidders are said to have gotten their little pro rata of the contract price. But things are going to be different under the present administration and already steps are being taken to break up the pool. Eastern contracting firms are to be invited here and their bids will be given the greatest consideration. The Architect and Engineer has heretofore refrained from attacking the pool for the reason that it has not been disposed to encourage outside competition. It believed that local work should go to local contractors. But if the local contractors who specialize in water front work cannot play fair and put in bona-fide bids without collusion it would seem to be time for outsiders to step in and take the work. It is the intention of this magazine to give its readers some inside facts about the water front pool in an early issue. There will be no suppression of names or facts and the disclosures that will be made are likely to open the eyes of the public.

The fact that several millions of dollars are to be expended on water front work within the next year or two gives added importance to the movement to break up the pool.

Practical Tests of Sand and Gravel*

By RUSSELL S. GREENMAN.

THAT almost all failures of concrete are caused by poor cement has been a popular opinion. After some failures the "post mortem" examinations have shown that poor workmanship, due to incompetent supervision, has sometimes been the responsible cause of the failures. Those experienced with concrete have, however, found that, in addition to these two factors, the other constituent elements in concrete may be the causes for poor results or failures. These are truths which have almost become axiomatic.

The relation of intelligent workmanship to good concrete is solely a matter for consideration between the workman and the owner, it is not a question of general interest. If the owner of the proposed structure is content with poor work, that is simply his own business. The question of proper materials is, however, of general interest, for many structures are often constructed from the same group of concrete materials. The selection of those elements which with proper and intelligent workmanship shall produce good concrete is certainly important.

How to secure and select the best materials is often a problem. Apparently good sands or gravels have been selected, but not always have lasting results been secured. The method of securing for the consumer a good and safe cement has been provided. The question of securing good aggregates has been provided for in many individual cases, but a campaign of education as to the need of careful selection of the aggregates and of construction in selecting them is still generally desirable. If it is true that the bulk of the cement now produced is used by the small consumer, then this applies especially to the smaller maker of concrete and not so much to those in charge of large public works. Even here, in many cases, surprising ignorance of the proper materials has been shown.

The selection of the materials for the concrete should be made only after careful examinations and tests, either in the laboratory or on the site of the work, or perhaps both. To aid this selection certain tests have been suggested and made. It will be found, however, that there are no standard tests or methods which can be used as a basis for comparable results. It is true that some of the laboratories of large public works and some departments of our state and national government make such tests, as for example the Structural Materials Testing Laboratory of the Department of the Interior, but almost all the tests made are individual in character and have not the endorsement such as the American Society of Civil Engineers has given to the method of testing cements.

We have before us, then, the question of tests and methods. These may be resolved into two classes, laboratory tests and practical field tests. The laboratory tests should be such that practical results and conclusions can be secured; the field tests should be made supplementary to the laboratory tests and confirmatory to them, and not substitutes.

The selection of the coarse aggregates, crushed stone or gravel, is the more easily made, but sands and other fine aggregates do not so easily divide into good and poor materials. How such a division may be practically made is the topic we are to consider in this paper is presented with the sole idea of starting a discussion as to the practical tests which should be made on materials proposed for use in concrete. When reference is made to sands it will include, of course, all materials for the fine aggre-

*Paper read before the American Society of Testing Materials.

gate, such as natural sands, screenings, iron ore tailings, etc. Gravels generally can be considered as sands and facts concerning the one usually apply to the other.

Sampling—It is, of course, generally conceded that any testing of the constituent materials is all wasted energy unless the samples submitted are thoroughly representative. It is certainly no easy proposition to take, for instance, a sample of sand directly from the sand bank or pit; but if the tests are to be of real value, provision must first be made for securing the representative sample. What should be considered the best way, and from what place is it best to take the sample? Shall it be taken from the pit or after delivery upon the work? Sampling at the pit means that either the pit must be uniform or that extraordinary judgment must be used in selecting a sample typical of the sand, or gravel, generally in that pit. Undoubtedly the best sample from any pit is that taken from a blend made of samples taken at various places in the pit; but in some cases, even with the most conscientious sampling, the pit sample may not be thoroughly representative of the sand as it is delivered upon the work. Therefore, whenever possible, the sample should be drawn from the sand hopper or taken from the sand pile after delivery upon the work. This sample, if accepted, should be kept as the standard, and future samples, whether taken at the pit or after delivery, should be expected to equal in qualities the accepted standard.

Laboratory Tests—Having secured the sample, what are the most practical laboratory tests? The tests for strength of the mortar made with the sand and a "standard cement" is always a desirable test, but will not the tests for percentages of silt and of voids and for size and grading of the sand grains give results that form equally as good a basis for the acceptance or rejection of the sand?

In order to consider the tests more fully without entering into a detailed consideration of the methods used in determining each result, let us adopt, for the present, as our standard the apparatus and the methods used by the Structural Materials Laboratory to which reference has already been made. It is very probable that most of the larger laboratories follow the same general methods and will vary only in details. Now, having selected a definite plan of testing, do these results have a practical value in determining the relative merits of the different sands? To discuss this phase of our topic we shall use the results secured in the laboratory of the Department of the State Engineer and Surveyor of State of New York. From 34 sands selected practically at random, yet typical, from over 200 tested during the past two years, the interesting results in Tables 1, 2, 3, and 4 are noted:

TABLE 1.—MORTAR TESTS, VOIDS AND LOAM.

No. of sands.	10	13	11
Class.	A.	B.	C.
Tensile strength, natural:			
7 day	217	167	121
28-day	305	271	208
Tensile strength, washed:			
7-day	201	155	123
28-day	301	249	212
Voids, percentage	32.0	33.4	36.6
Loam, percentage	4.1	3.3	2.2

TABLE 2.—GRANULOMETRIC TESTS, SHOWING PERCENTAGES PASSING DIFFERENT SIEVES.

Sieve. Class of Sands.	A.	B.	C.
2	100	100	100
4	99	99	100
6	98	98	99
10	89	96	98
20	69	87	95
30	47	72	79
40	29	56	60
60	14	31	38
74	8	17	29
100	3.8	5.8	7.5
140	2.3	2.6	3.6
200	1.6	1.6	1.6

TABLE 3.—EFFECT OF VOIDS.

Percentage of voids	25–30	30–35	35–40
No. of sands	5	17	11
Average percentage	27.8	33	37.8
Tensile strength: *			
7 days	192	164	140
28 days	310	256	220
Percentage passing 100 sieve	2.8	6.4	6.7

*Results taken only of washed sample so that effect of loam would be nil.

TABLE 4.—EFFECT OF LOAM.

Percentage of loam	0–2.0	2.5–3.5	5.0–6.0
No. of sands*.	7	6	5
Average percentage	1.0	3.0	5.6
Tensile strength, natural:			
7 days	128	181	222
28 days	254	273	324
Tensile strength, washed:			
7 days	148	178	205
28 days	261	271	310

*Sands selected which had approximately the same percentage of voids.

A study of these results will show that a sand can be judged by its percentage of voids or of loam and by size and grading of its sand grains. As a general rule it would be impracticable to make long-time tests for tensile strength, so these tables give only the 7 and 28-day tests. Longer tests are, of course, desirable, but as we are now only considering practical tests we will endeavor to draw some conclusions from the tests at hand. We find that in Table 1 the highest tensile strength is with the lowest percentage of voids and the highest percentage of loam; and that the natural samples containing more than 3 per cent of loam are stronger than those with washed sand. From Table 2 we note that the smaller percentages of voids are secured by the sands having the best grading of the sand grains, and that the sands with the largest percentages of fine grains are the poorer. Table 3 emphasizes the fact that sands are stronger when the percentage of voids is smaller, and that the less percentage of very fine grains the better the strength. Table 4 shows that loam to a certain amount is rather an aid to strength. This statement must not, however, be construed to mean that it would be advisable to permit large percentages of loam.

From this brief statement of the results secured and conclusions drawn can it not be seen that each test is a very important aid in determining the quality of the sand under inspection? There are, of course, other laboratory tests which are of great importance in the selection of a sand; among them is notably the careful examination of the character of the sand grains.

Ernest Flagg on American Architecture in General and the Skyscraper in Particular

FOREIGNERS scoff at the appearance of our cities, and justly, too. They see our darkened streets and darkened buildings. Having the clearest atmosphere with which any city is blessed, they see us busily engaged in depriving ourselves of its benefits, and they thank God that the high building craze has not reached the shores of the Old World.

* * *

Our artistic sense is undeveloped. There is no great body of amateurs here, such as is found in more refined communities, who are capable of analyzing our productions and placing them at their true worth. It is only a question of time, however, when public taste will become more cultivated, and when that time does come there will be a great crumbling of reputations which now stand high.

Our architecture smacks too much of archaeology; it is not modern; we use modern methods of construction and antique methods of design. Why do not people in the United States recognize that every great work of art which has had an undying reputation was strictly modern when it was made? No copy or adaptation, no matter how cleverly done, can endure the test of time and stand as a work of art.

* * *

We are veritable barbarians in matters of taste.

We ransack Europe for old fragments which, though they may be charming in their original situation, become little better than so much rubbish when set up in the midst of inharmonious surroundings. We deck out our houses and grounds with these things in precisely the same way and with as little regard to propriety as savages use when they array themselves with incongruous objects which they obtain from European traders.

The savages which Henry Hudson, on his second visit, found wearing the hatchet heads he had sold them as neck ornaments present no more comical picture than our art amateur often does in his use of the spoils from European churches and monasteries.

One sees gardens attached to shingled cottages decked out with marble seats, vases, and fountains taken from Italian villas. Houses in our cities are fitted up with fragments from European palaces which are as much out of harmony with the surroundings as a steam engine would be in a mediaeval church. Sometimes whole interiors have been taken from a European building and set up here. Rich men's houses are turned into museums, where there are as many styles as there are rooms, all warring with each other and with the exterior of the building.

We have been having a very carnival of vulgarity, and an ostentatious display of wealth and of bad taste by people who are regarded as leaders in refinement.

* * *

Unfortunately architecture in America is not in a normal condition; it is, indeed, in a most abnormal condition. In past ages architectural progress has been an orderly system of evolution. All building within a radius which was sometimes contracted and sometimes extended followed a common line of development. Change was gradual and fashion varied as a result of the combined efforts of all the minds engaged on it, each builder trying to improve upon what he saw about him and working in a medium with which he was perfectly familiar.

With the great multiplication of books of travel and illustrations from foreign lands which began in the latter part of the eighteenth century, and which received such an impetus about the middle of the nineteenth century through the introduction of photography, when pictures of buildings in all parts of the world were placed within the reach of every one, the horizon of the builder was broadened, and, strange to say, with the most pernicious consequences. The architect was no longer satisfied to build in the style of his time and country and to try to improve upon what he saw about him; he found it easier to copy than to invent. With the flood of illustrations came the desire to reproduce for modern use the buildings of every age and clime.

* * *

The time is at hand when the absurdity and bad taste of our past methods will be fully understood and freely admitted. We shall cease to wonder that cultivated foreigners are not favorably impressed by our tall buildings, and will set ourselves to work to make them as perfect and reasonable artistically as they are ingenious and daring mechanically and constructively. Sheet metal cornices, with profiles suitable only for stone, will no longer be used at the tops of towering structures, where they serve no other purpose than to shut out some part of the sadly needed sunlight from the abyss below. Stonework which appears massive, but which is in reality only a thin veneer over the iron columns, will not be thought necessary.

Terra cotta will be used in a legitimate way as a filling for panels where no strength is required, or as a covering for metal to protect it from fire, and will no longer masquerade as stone. Huge walls of masonry, which add nothing to the strength of the building and which must be supported at great expense by the iron framework, will be dispensed wtih. The propriety of using colonnades and arcades as crowning features perched on the top of facades hundreds of feet high, where they belie the interior arrangement, will be questioned, and a hundred other features which are not reasonable will give place to forms which are suitable both to the material used and to the purpose for which it is used.

* * *

Late French Architect a Notorious Practical Joker

THE well-known architect, Binet, who built the magnificent gate of the Paris Exhibition of 1900, and who has just died at the early age of 45, was one of the most incorrigible practical jokers in Paris. Endless stories are told of the tricks he used to play, but the best of all of them has never been printed.

Binet was on his way to the Ecole les Beaux Arts one day when he met the Concierge in the courtyard. The Concierge of the Paris Fine Arts School is an old soldier and an incorrigible gossip. He was standing admiring a tortoise which he had just bought and called Binet's attention to the creature.

"Yes," said Binet, "he is all right; but don't you think he is rather small?"

The Concierge admitted that his tortoise was not very big.

"What do you feed him on?" said Binet. "Lettuce," the Concierge said.

"Ah! that's rather a mistake; you ought to give him rape and wild thyme, and you will see how quickly he will grow."

Binet took a measure from his pocket, solemnly measured the tortoise and went away. A few days afterwards he measured him again.

"I see you have followed my advice," he said. There was no doubt about it. The tortoise had grown from the size of the palm of a small hand to that of a small saucer. The next time Binet came he was as big as a dessert plate, and in three weeks or a month he had grown to the size of a soup plate. The Concierge got a little nervous.

"He is getting too big," he said. "I have been to the Jardin des Plantes and I saw a giant tortoise there. We can't have a thing that size in the Ecole des Beaux Arts."

"You had better take to feeding him on salad again," said Binet.

The Concierge did so, and the tortoise shrank. He shrank so much that one day he was only the size of a small paper weight, and the next day he had disappeared entirely. The explanation of the mystery was that Binet had laid in a stock of tortoises of different sizes and changed them one by one when the Concierge was not looking. His friends profited by the joke, for Binet did not know what to do with the creatures, of which he had bought 58, and distributed them to everybody who would take one.

* * *

Economy of Tiling for Floors and Walls

THE price of labor is an important element in the cost of tiling, and as wages vary considerably in different localities, it is impossible to quote prices on a tiled floor and wainscoting which will hold good for all places. Roughly speaking, however, ordinary tiling costs from about 50 to 60 cents per square foot for floors and from about 60 to 70 cents per square foot for walls. At first glance, this seems to be a large amount paid for a floor or wall covering for the bathroom, kitchen, laundry, vestibule and porch, which are the parts of the house where tiling is most necessary. It should be remembered, however, that in laying a tile floor one saves in so many ways that in spite of the fact that the initial cost of tiling is considerable, it is nevertheless the most economical of all flooring materials in the parts of the house just mentioned.

A tile floor, when properly set, is virtually everlasting. It requires no repairing, painting or oiling. It is not necessary to cover it with carpet. Ordinarily it can be cleaned by simply flushing it off with water. This is a tremendous saving of labor in comparison with the laborious scrubbing and oiling, necessary to keep the wooden floor in proper condition.

A tiled wall or wainscoting never has to be papered or painted. It is so durable that it is not injured by the ordinary knocks and blows which soon make wall paper look so shabby as to necessitate replacing. Wall paper is frequently ruined by dampness, by water or other liquids being splashed upon it, and by smoke or burns from gas jets or lamps. None of these things have the slightest effect upon a tile wall. Consequently, the economy of a tiled wall, due to the saving of repairs, is great.

A house with a tiled bathroom, kitchen, butler's pantry, vestibule and porch always looks fresh and clean, and is free from the disagreeable musty odor so characteristic of old houses. This is caused by the germ of decay, bred in the decomposing organic matter that has been absorbed by wooden floors and walls which are being constantly spattered with water or other liquids containing animal and vegetable matter.

The decorative, sanitary and durable qualities of tiling are so great that there is no better way of practicing real economy than by figuring closely on all other parts of the house, so as to have sufficient surplus to meet the initial expense of tiling the bathroom, kitchen, butler's pantry, laundry, vestibule and porch.

Facts About the Redwood Shingle Industry

(Contributed.)

TOO much indifference has been paid to the breadth and scope of the redwood shingle industry, one of the greatest natural sources of wealth possessed by this productive State. Californians have been guilty of criminal neglect in this regard. They have failed to recognize and appreciate in the towering forest kings that clothe certain favored sections of the State any attribute but that of a colossal curiosity created to lure sightseers and tourists. But this attitude is now changing. The redwood shingle industry has metamorphosed conditions and this and the coming generations will see the wide spread cultivation, the increased demand and the growing manufacture of the California redwood for commercial purposes.

Its products have halted the attention of the world. They now constitute a necessity that grows hand in hand with civilized progress. California shingles are creating markets all over the world. They have probably been less successful in this regard in our own State, due to the universally known backwardness of Californians to see merit in their own products. The brand "Made in California" can be established as a commercial asset only by our own endeavors. Let us consider the intrinsic value of California redwood and determine in all fairness its merits and advantages.

When properly dried it retains its shape without shrinkage. For this reason it is supreme for patterns or for the finest finishing work. It is in constant use in the Risdon and Union Iron Works for pattern making. A four-foot panel of redwood, kiln dried, remains a four-foot panel, while its Oregon neighbor will shrink an inch each way. For interior finishing the results that can be attained wtih redwood are beautiful and artistic beyond description.

Sawed slightly across the grain the pattern effects are remarkable. When finished in the natural wood color, the bright, clear red coloring is superb. When stained a multiplicity of effects can be produced, that surpass the finest graining. The sapwood, with its bright yellow, the curly redwood, with its wavy patterns and the wonderful buhrl, with its bird's-eye patterns and deep coloring—these adaptions of the redwood run the gamut of color and pattern, and offer an infinite variety that never stales.

When exposed to the weather, redwood furnishes a surprise. It is not a hardwood, nor is it a heavy wood, yet its durability is practically endless. Railroads report it as superior to all other woods for ties, because the action of damp earth and weather extremes are resisted to the utmost. The Southern Pacific has 15,000,000 redwood ties in use west of El Paso—some of them having been down in use for half a century. For ground work, for foundations, for exposed timbering, no other wood offers the same durability.

Perhaps redwood's greatest claim to distinction is its reputation as a "fireproof" wood. By that we do not mean that redwood positively will not burn. But in so far as a wood is non-inflammable, redwood qualifies as a fireproof wood.

There seems to be something peculiar in the growth and chemical constituents of redwood. It is not only non-resinous, but it seems to have in it elements (some say an acid) which actively resist burning. Mr. P. H. Shoughnessy, Chief Engineer of the San Francisco Fire Department, writes.

"In the recent great fire of San Francisco that began April 18, 1906, we succeeded in finally stopping it in nearly all directions where the unburned buildings were almost entirely of frame construction, and if the exterior finish of these buildings had not been of redwood lumber I am satisfied that the area of the burned district would have been very greatly extended."

Recently the shingle manufacturers of the State of California have formed a combine called the Redwood Shingle Association. This combine was not formed to demand higher prices for redwood shingles, but for the purpose of exploiting the sales of the California redwood shingle. It has begun a wide publicity and advertising campaign.

It means to put the redwood shingle in the position that it deserves in its mother State and for this purpose it has begun to manufacture an entirely new redwood shingle, called the No. 1 Clear Redwood Shingle. It is far superior to any other shingle heretofore on the market and is the only guaranteed shingle on the market today. Each and every shingle passes through the hands of an inspector as it comes off the machine and every bundle is tagged with the trade mark and guarantee of the manufacturer. Architects and builders will learn to specify this redwood shingle due solely to its superior qualities.

As an illustration of this durability that cannot be too strongly emphasized, let us examine a redwood shingle relic—and a California pioneer. It was taken from the roof of the barracks in old Fort Humboldt a few years ago. It sheltered General Grant in the days when California was a wilderness and Grant a lieutenant far from fame. Guiltless of paint or stain protection it endured for half a century, assailed by storms such as only this northwest Coast can furnish, and scourged and worn by the wind-driven sands of the Bay shore and neighboring beach.

Even the iron that held it rusted away, but the shingle remains; a little battered, a good bit worn, but fit for duty for another span of half a century. Certainly a striking and perfect example of the durability that we claim for redwood.

Lumber drops three or four dollars a thousand in the past three years. Redwood is scrambling for a market in our own California and California tributary territory, on a price basis, in competition with Oregon and Washington pine—a lumber which because of cheaper stumpage, lower cost of logging and milling and less waste at the saw, can always hold the whip-hand in a price competition with our own redwood, but a lumber which utterly lacks the qualities which give such value to redwood, and in their stead offers price only as their only argument. And the redwood shingle, fire-resisting and weather proof, is losing ground to the red cedar of the North.

What sort of an economic condition is it that rebukes this industry with its ten thousand workers, its $25,000,000 invested in working plants, its $150,000,000 of potential capitalization, its contribution of $8,000,000 of business a year to the advancement of the State of California—throws it down, passes it by in favor of a rank outsider?

This is no time for mincing words; "All for California" is your battle cry, and "Made in California" is your watchword. Are they idle slogans? Yet it is a fact that 200,000,000 feet of Oregon pine and half a billion cedar shingles were bought in California territory last year? Three or four million dollars of business handed to the Northwest; two and a half or three millions of California money spent to pay Oregon and Washington labor, develop Oregon and Washington industry, to build and fill Oregon and Washington homes and supply these States with munitions of war to aid them in the fight now on for the commercial supremacy of the Pacific Coast.

* * *

The Patrolman's Wife—Does your husband eat fruit in the morning? The Roundman's Wife—No; he's only on duty in the evening.—Yonker's Statesman.

A Few Points for the Concrete Contractor

THE placing of concrete is a matter requiring considerable care. Forms should be perfectly clean and free from sawdust—a very hard material to get rid of. Care should be taken that no dirt falls into the concrete, a point that is often overlooked by workmen. At the north end of panels, beams, and girders placed north and south, and at the west end of panels, beams, and girders placed east and west, there should be holes cut in the bottom forms, through which to brush the dirt and dust before placing the concrete. At the bottom of the column forms holes should be made through which to clean out sawdust and dirt of all kinds, and the holes should be on the north side.

The reason for mentioning north and east is that this is the practice of the writer. Any other location is as good; but there should be a system established and strictly adhered to. It is essential that the holes be filled before the concrete is poured, and men sent to fill the holes should find them with the fewest lost motions. When a certain location is established, then the holes will be quickly found. This is one of the little points making the difference between profit and loss in contracting work. For stopping holes in the bottom of forms pieces of tin are good. They can be made from old tin cans or obtained from a nearby tin shop, and short nails can be used to fasten them over the holes. For holes cut in upright forms a secure plug is made of a piece of wood, a little smaller than the hole, with a piece of tin fastened to it, and projecting over the edges. It is inserted in the hole with the tin on the inside, and a small wedge placed between the side of the plug and the edge of the hole will hold it in place until the concrete rises to that level, after which the pressure of the concrete will hold it.

Forms must be strong enough to retain wet concrete, which exerts a pressure equivalent to a fluid weighing 80 pounds per cubic foot, or it must be strong enough to withstand the pressure due to tamping in case a "dry" concrete is used. Years ago "dry" concrete was almost universally used. The cement, sand, and aggregate were dampened to such an extent that a handful, when squeezed, would retain its shape, but the hand would not be wet or stained and the lump would fall to pieces when shaken. It was like moist brown sugar. When concrete block machines were first introduced this quality of concrete was advocated because the forms could be removed within a short time. The claim was made that it was stronger than "wet" concrete. Some men still make that claim. When "dry" concrete was deposited in forms it was required that it be tamped until the moisture rose to the surface and the concrete quaked. It was really remarkable to see how little water was required to make a mushy-looking concrete after considerable tamping.

Wet concrete contains water in varying degrees. It ranges all the way from a concrete having slightly more water than what is termed "dry" concrete to a concrete so wet that it runs like cream. In the days when "dry" concrete was common it was believed that an excess of water caused the materials to separate and the cement to settle to the bottom. The truth about the right amount of water is that the best and strongest concrete is that in which the consistency is that of a thick soup. Soup is of two kinds bouillon, which is thin and watery, and broth, which is thick. When soupy concrete is mentioned it is of the broth and not of the bouillon variety of soup that one speaks.

Wet concrete is more economically placed than dry concrete, for it is mixed in a shorter time and requires no tamping. It settles readily into all corners and crevices, and thus presents a finer appearance on the surface. Better appearing work can be done with a flowing concrete. When concrete had to be thoroughly tamped it was hard to figure on the strength of forms, and bulging forms were common. With wet concrete the pressure is always uniform and can be calculated and the forms designed accordingly. When the concrete is reinforced dry concrete cannot be used, for it is absolutely essential that there be no displacement of the steel or disturbance of the bond between the steel and concrete. If dry concrete, with the necessary tamping, is used, the steel will generally be moved a little and the bond between the steel and the slowly-setting concrete will be disturbed. Wet concrete, which flows readily around the steel, is the only concrete to use with reinforcement. Thousands of tests have demonstrated that there is no tendency on the part of the cement to settle to the bottom and separate from the aggregate and sand if the concrete is of the proper consistency.

The writer commenced concrete work about twenty-five years ago, when dry concrete was the only kind permitted. He was discharged from one job twenty-three years ago because he permitted the foreman to use a wet, mushy concrete in filling certain pier forms. He received a few weeks ago an apology from the man who discharged him; but that does not recompense him for the loss he suffered at the time for what was termed his "ignorance and carelessness," and which he thought was progressiveness. It was not uncommon in old-fashioned dry work to find the interior walls, when torn down, lumps of unset materials which had been rolled up into balls coated on the outside with cement, these balls having been formed during the mixing process. When a large amount of water is used such balls cannot form.

Dry concrete is not stronger than wet concrete. Hundreds, perhaps thousands, of experiments have conclusively proven this idea to be wrong. The results of these experiments have been published over the names of responsible and well-known authorities, so there is no reason to keep the old idea running. Dry concrete obtains a certain degree of strength in a shorter time than it takes wet concrete to obtain the same strength. This enables forms to be removed sooner with dry than with wet concrete. Wet concrete and dry concrete placed in the same day are of practically equal strength at the end of thirty days, but at the end of the first four or five days the dry concrete is the stronger. After thirty days the wet-mixed concrete gains rapidly in strength, as compared with the dry-mixed concrete, the latter picking up in strength if wet with a hose or otherwise drenched with water. Concrete requires water in order to set and harden properly, so the necessary water must be supplied during the mixing period. Three months after mixing the wet concrete is much stronger than the dry concrete, and it always retains this advantage; but as the years go by and the dry concrete has an opportunity to absorb moisture, and the wet concrete gradually loses excess moisture, the difference becomes small. For quick strength use as little water as will make good concrete. For permanent strength and low cost in mixing and depositing, use wet concrete. Wet concrete is much more uniform in strength than dry concrete, and plenty of water is required to harden concrete. In summer a certain excess of water must be used to supply the loss caused by evaporation and the absorption of water by the sand and stone. In winter a much smaller

amount of water should be used in order to obtain quick setting and thus avoid danger of freezing.

The foregoing matters have been touched upon several times; but they are very important. The forms should be tight in which concrete is deposited. The surface of the wood next the concrete should be smooth and the edges of the boards closely fitted. The forms should be thoroughly wet before the concrete is deposited in order to make the forms swell, and thus close the joints and prevent leaking. Another important reason for wetting the forms is to prevent them absorbing water from the concrete which it requires for setting and hardening. Use no oil on forms. Oil is nasty, and the atmosphere seems somehow to become filled with oily vapor after a few days of its use. It sometimes discolors the face of the concrete, and it is always difficult to properly treat surfaces which have come in contact with oiled forms. It is impossible to get rid of the thin oily coating and it is impossble to make plaster stick to an oiled surface. The writer uses plain water or soap. Common soap can be melted in hot water or soap oil can be purchased from the nearest soap factory. It is applied with a brush, and does not injure the surface of concrete. It helps to make it waterproof and can be washed off with water when fresh, so that plaster can be applied.

Common whitewash is a fine material with which to coat forms. It would be difficult to find anything cheaper, and it is really very efficient in preventing concrete from adhering. If wet concrete is poured against dry forms large areas of surface will be pulled off with the forms, so that some coating is necessary. In the order of cheapness and merit the coatings stand about as follows: Water, whitewash, soap, oil. In the order of practicability they stand as follows: Whitewash, soap, oil, water, for water is apt to dry out during the filling of a high form, and more water cannot be added without thinning the concrete, already poured, and possibly injuring it. The writer prefers soap to all the coatings he has used.

The stopping of joints which open in forms is accomplished by the use of water to cause the wood to swell and partly by filling the joints with some material. The writer has found nothing equal to mud paste. A clay of some sort can generally be found in the vicinity of every concrete job, and it is an easy matter to mix it with the paste and fill all cracks. Sometimes a long time intervenes between the placing of the clay and the pouring of the concrete, so the clay dries up and falls out. Some contractors use thin oil with which to mix the paste instead of water, and this is generally satisfactory. The writer has used oil and has also used thin soap or very heavy soapy water. This is cheaper than oil, and much more readily mixed with the clay. Some fiber or hair mixed with mud paste makes it possible to use it in filling quite large cracks, although the use of fiber is not common. The writer has used it on several jobs with great satisfaction.

Concrete should be deposited in thin layers and be well tamped if dry, and well puddled with sticks and rods if wet, in order to fill all crevices and insure that all aggregates are coated with cement mortar. When concrete is poured in at the end of the form and permitted to run down a slope, there is bound to be a separation of materials, the large pieces freeing themselves from the mortar and running ahead of it, the slow-going mortar generally setting before it gets an opportunity to cover the faster-moving aggregates, thus making porous places in the mass. When work is stopped all joints should be vertical.

When work is resumed the face of all joints should be washed thoroughly and then be coated with a neat cement wash. When the fresh concrete is poured it should be well spaded against the old face. Beveled strips placed in the edge of all work help to make keyed joints when work is resumed. To obtain a smooth face do not depend too much upon coats of plastering, but try and get it in the forms by using a perforated concrete spade or a potato fork to work in next the form and press back the large stones so that the mortar can work to the front. This is very good when making curbs and walls. For the top surface of curbs and walls, as well as for many floors and sidewalks, use a tamping device made on the principle of a wire potato masher to push down into the mass all large stones, and thus force the thin mortar to the surface. Smooth it off with a long board on edge, and then brush it over with a stiff broom instead of floating it. A lean mixture is generally used in the body of sidewalks and floors for the sake of economy. Sometimes it is cheaper to use a richer mixture all the way through and treat it as above described, thus saving the high finishing expense.

The reason that difficulty is experienced in making new work join to old is that not sufficient care is used in getting the old faces clean. Washing with water is not sufficient, and brushing is not sufficent. A wire brush is not always satisfactory, for it produces much dust, and this is not always washed off. The writer uses steam under high pressure on large jobs, for it will certainly clean off the concrete as nothing else will. If the job is not large enough, then use wire brushes and plenty of elbow grease, following with water applied through a hose. On jobs where steam cannot be had, then a solution of acid should be used to get the concrete perfectly clean. If reinforcing is used, do not use acid, but do the best work possible to make a good joint without it. When the top of a wall is setting, cement paste is forced up to the surface, and this sets and becomes dead, the product being known as "laitence." It is this laitence that makes the trouble. Sometimes men make a mixture of sand and cement one to three quite dry, and pour it over the top of a wall a few minutes before work stops, and puddle it well, so that as the cement paste rises it mixes with this dry material, and a semi-porous coating is formed on top, which contains no dirt. When starting work the next morning a thin paste of cement and water is placed over the top, and then on this a cement mortar one or two inches thick. The concrete follows quickly, and the result is generally a first-class joint.

In applying plaster to the face of concrete work, an attempt must be made to get a surface with a good suction, as painters term the property that makes a surface eat up paint. The surface should be first gone over with a wire brush, and this should be followed with a wash of weak acid, such as strong vinegar, sour beer, a weak solution of hydrochloric acid, etc. Then go over it several times with a wide brush dipped in water until the surface is damp, but not wet. Do not use a rich mixture for the plaster. Use one part of cement to three parts of clean, coarse sand. Put the first coat on thin and scratch it. Apply with a hard pressure and let it set until strong enough to carry the next coat. Before applying the next coat, wet the first one, and then apply the second in the same way. Three coats will generally be sufficient. Avoid as much as possible the working of material more than merely enough to make it adhere. A lean mixture gives far better results than a rich mixture, and is not so liable to show hair cracks. Quick setting causes hair cracks, and a rich mixture sets quickly.—The Contract Record.

San Francisco Architectural Club Notes

By J. E. DWAN.

THE San Francisco Architectural Club has outlined a program for the future which promises to be not only up to the standard of the club, but to surpass all past records.

The trip the club members made to the Golden Gate Brick Company's plant at Antioch was such a splendid success that the few members who did not participate are regretting exceedingly their inability to take in the trip, and upon hearing the enthusiastic talk of members who attended, declare that they shall never miss any of the events in the future.

The steamer "Walker" left the city at 5:45 o'clock, and as it was planned to have all of the party at dinner at one time, the captain made preparations to accommodate the thirty-two members and himself, after the appetites of all the other passengers had been satisfied. To find out what happened after dinner it will be necessary to ask some member, "Who owns the ship?" His answer will be sufficient explanation.

Upon landing at the Golden Gate Brick Company's wharf the crowd proceeded to a uniquely arranged rustic barroom. After lingering there a few moments they were taken to their bunks, consisting of eight inches of straw.

Upon arising in the morning the party proceeded to the messroom, where they partook of a wholesome breakfast prepared in a rustic fashion by Mr. Pratt and his brother. To use a slangy expression, that was "some breakfast."

The balance of the day was taken up in swimming and field events. In the afternoon the married men and the single men lined up for a game of ball. All were enthusiastic fans, and the game proved it, ending with a score of 13 to 13. The tie was not played off, as it was considered advisable to leave this for a future date. Therefore, there is a standing challenge at the club for a game between the single men and the married men.

After the ball game the party again returned to the messroom, where they were served with a bull's-head dinner.

At dusk a large fire was built on the bank of the river, and the party bivouacked around the blazing embers until the arrival of the steamer "J. D. Peters" for the return trip.

A special meeting of the club committees was held Friday evening, October 13th, when plans for the annual entertainment and dance were outlined, and the ball set rolling, with a promise of the biggest time of all. This entertainment and dance will be open to members and their friends.

On Saturday evening, November 11th, the club will hold their annual banquet.

With all of these merry good times, the club has not overlooked the educational side, and a program, including some very instructive and interesting lectures, is on file.

Mr. Frank Shea, architect, will lecture on "Ecclesiastical Architecture" on Thursday evening, October 26th. As Mr. Shea has made a special study of church architecture his lecture will be an interesting one and full of instruction.

Members of the Architectural Club of San Francisco are warned of their loss if they do not keep a club program before them, and every time they make a date refer to this program, and make sure nothing important is going to be overlooked.

The Danger of Working Drawings

BECAUSE we all live in houses we all assume quite naturally that we know something about architecture. And so we do, in a way. We have ideas, very practical ones sometimes, about the house not yet started and we have opinions, important to ourselves at least, about the house just completed; but very few of us have an opinion worth while to either ourselves or an architect about the house that is in course of erection. That is why it is a firm belief among the profession that a client should never be allowed to see a working-drawing—that all he can understand is the "finished picture." When he visits his house-to-be he is quite willing to believe that, completed, it is going to look like the beautiful water-color he was shown—shade trees, garden, group of admiring passers-by, and all. But let him catch sight of the superintendent's sections and details and he is immediately confused and full of misgivings. Such a mass of lines and figures spoil his mental picture.

A New York firm telling recently of a client of theirs going to see the Newport residence they were building for her. Everything seemed to satisfy her, and she nodded wisely when half-built features were explained to her. But just as she was about to leave she saw, lying on the vestibule floor, the full size detail drawing of the conch shell flanked by dolphins that was to go over the door. It was an admirable piece of design, spirited, well modeled, and above all appropriate for a seaside place. No doubt had the lady not seen it until it was carved and put in place she would have been well pleased, especially is some more knowing visitor admired it first. But the big drawing alarmed her. "Oh, I can't have that awful thing!" she exclaimed in shocked tones. "Why, it makes one think of the sea! Send it back to the architects and I will write them what I want." She did. Her note read: "You make too much of the surrounding conditions in your ornament. Because a house is near the sea that is no reason why it should suggest the sea. You must remember that we have to live in this house," etc. Further on she called attention to the enclosed cut of a decadent, extremely poor French cartouche which she "wished substituted for the sea design, as being much more appropriate." Experiences like this teach the architect that detail drawings must not be shown to the average client, even though the latter does suspect him of trying to "work in something." He would only be upset; whereas, when he sees the finished house with bay trees set out in tubs and every detail of color seen to, he is delighted.—The House Beautiful.

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Production of Lime in 1910

THE total production of lime in 1910, according to a statement compiled by Ernest F. Burchard, just made public by the United States Geological Survey, was 3,469,415 short tons, valued at $13,809,290, as compared with 3,484,974 short tons, valued at $13,846,072 in 1909. This represents a slight decrease in tonnage, viz., 15,558 tons, and a decrease in value of $36,782. The average price per ton in 1910 was $3.98, as compared with $3.97-1-3 in 1909, or an increase of two-thirds of a cent a ton. The total number of producers reporting in 1910 was 1123, as compared with 1234 in 1909, a decrease of 111. This apparently large decrease in the number of producers was due partly to the inactivity of a number of small kilns operated by farmers for burning lime for local use as fertilizer, and partly due to the abandonment of old and worn out kilns. The heaviest decrease in the number of producers was in Pennsylvania, but Porto Rico, Maryland, West Virginia, and Wis-

consin showed marked decreases. The five leading States in 1910 were, in the order of their production, Pennsylvania, Ohio, Wisconsin, Maine, and Missouri. Pennsylvania produced in 1910, 877,714 short tons of lime, valued at $2,440,350, the average price being $2.78 per ton. There were 572 active producers in Pennsylvania, including a considerable number of farmers who produced only a few hundred bushels each for fertilizer. The Pennsylvania production represented a decrease in quantity of 3,725 short tons, and in value of $92,104, as compared with 1909, the price falling 9 cents per ton. In Ohio there were produced in 1910, 415,285 short tons, valued at $1,647,335, representing an increase in quantity of 71,531 short tons, and in value of $405,616. The average price per ton in 1910 was $3.97, which represented an increase of 35 cents over the price in 1909. There were 36 producers in Ohio in 1910 as compared with 33 in 1909. In 1910 Wisconsin produced 248,238 short tons of lime, quarried from native rock, valued at $959,405, besides 21,000 tons burned from stone imported from other States. The stone imported from other States was mainly high-calcium limestone, the lime from which was used by beet sugar refineries. The 1910 production in Wisconsin as compared with that of 1909 represents a decrease in quantity of 20,012 short tons, and in value of $108,095. The price per ton in 1910 was $3.86 as compared with $3.98 the preceding year, and there were 40 producers in 1910 as compared with 46 in 1909. Maine produced in 1910, 179,656 short tons of lime, valued at $893,599, at an average price of $4.97 per ton. This represents an increase in quantity of 1092 tons, but a decrease, in value, of $64,091 and, in average price, of 39 cents. In 1910 there were 7 producers as compared with 9 in 1909. Missouri produced in 1910, 193,964 short tons of lime, valued at $837,681, the average value per ton being $4.32. As compared with the 1909 production this represents an increase in quantity of 11,504 tons, and in value of $22,314, but a decrease in average price per ton of 15 cents. In 1910 26 operators reported production as compared with 27 in 1909.

In 1910 there were 52 manufacturers of hydrated lime as compared with 50 in 1909, and the production in 1910 was 320,815 short tons, valued at $1,288,780, an average price per ton of $4.02, as compared with 204,611 short tons valued at $904,900, or an average price of $4.43 per ton in 1909.

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Sparks from the Fire Waste

The fire waste of the country is excessive, and is sapping its prosperity. Reduction of the fire waste is an important part of the campaign for the conservation of the national resources.

Fire losses in the United States and Canada in 1910 were $234,406,650, most of them due to carelessness.

Fire losses for the first six months of 1911 were $129,691,750, as against $99,228,900 for the same period last year. If this burning ratio continues, the loss for 1911 will be over $260,000,000. Last year the bulk of the losses came in the last six months.

Fire losses and the cost of fire prevention in the United States amount annually to $450,000,000, or more than the total American production of gold, silver, copper and petroleum in a year.

The cost of fires each year is one-half the cost of all the new buildings erected in a year.

The annual per capita fire waste in the United States is $2.51, in Europe 33 cents. Cause: The latter has better construction, less carelessness, increased responsibility.

If buildings in the United States were as fireproof as in Europe, the annual cost of fire losses and protection would be only $90,000,000.

New York City spends $10,000,000 a year for fire extinguishment and $15,000 a year for fire prevention.

Of 3875 known causes of fire in Chicago last year, 1089 were due to the careless use of matches. Nearly ten thousand matches were scratched every second of the day in this country, every one a possible fire.

Fifteen hundred people are killed and 5000 are injured annually as a result of fire.

The proportion of insurance capital to insurance liabilities is very much on the decrease. In the past forty years the liabilities have almost doubled, while only $6,000,000 more capital was invested in the business in 1910 than in 1870.

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Why English Workingmen went on Strike

Perhaps some explanation of the strikes which recently caused riot and bloodshed and paralyzed industry in England may be found in the following comparative table of weekly wages paid in England and the United States in the same vocations:

	England.	United States.
Bricklayers	$9.85	$30.42
Stone masons	9.57	26.77
Carpenters	9.57	21.90
Joiners	9.57	21.90
Plasterers	10.14	29.00
Plumbers	9.67	27.37
Painters	9.12	20.60
Hod carriers	6.57	16.73
Laborers (masons)	6.57	16.73
Fitters	8.76	18.13
Pattern makers	9.25	22.30

These figures are for the year 1909 and are furnished by the United States Government. Since then there have been advances both here and abroad, but the ratio remains the same. It may also be noted that the hours of labor per week in England average about 10 per cent more than in the United States.

These statistics, says the American Carpenter and Builder, have been quoted in newspaper and magazine articles to show why English workingmen emigrate to the United States, but may they not be equally eloquent in demonstrating why those who do not or cannot emigrate resort to the strike to better their condition?

Recent investigations prove that, except possibly in the items of rent and clothing, the cost of living is as high in England as in the United States. In fact, if English workingmen should insist upon the same style of living as that to which their American brethren are accustomed to it would be higher. With very few exceptions all kinds of meat products are higher abroad than here. This is natural, because the vast bulk of England's meat supply is imported.

The increase in the cost of living has created no end of agitation and discontent in the United States, but it is easily demonstrated that it has not caused anywhere near the hardship and suffering here that it has abroad, not only in England but in continental countries.

With the Contractors

New Headquarters for the San Francisco General Contractors

By WM. E. HAGUE.

FOR many years past, the headquarters for contractors, material men and the building industry in general, have centered in the former Builders Association and Builders Exchange, and their quarters have never been adequately representative of the money and capital actually represented in the great building business of the city. They have been of cheap construction, cheaply finished and poorly ventilated.

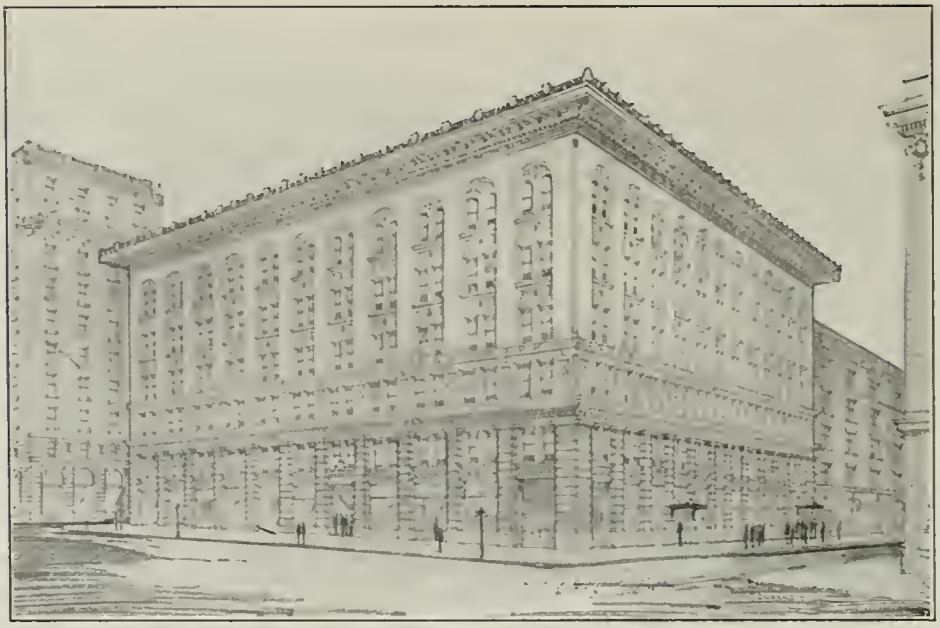
The need of large class A headquarters, on a main street and in a prominent building, has been felt for many years, and it now seems as though this desire and need is about to be fulfilled.

The Sharon Estate Company is about to erect for the General Contractors Association a five-story class A building of magnificent proportions on the northeast corner of New Montgomery and Jessie streets. The accompanying illustration is a reproduction of the design as prepared by Mr. Geo. W. Kelham, the architect for the owners.

The contract for the general construction of the building will be let as soon as the working drawings and specifications are completed, and the structure will be one of the finest in the city. The building will have a frontage of 137½ feet on New Montgomery street, and 148 feet on Jessie street. The auditorium of the General Contractors Association will occupy a large portion of the ground floor and will have a floor area of 6300 square feet, leaving space for two stores and the entrance of the building at the front. This large room will have a height of 24 feet, with a mezzanine floor around three sides containing the figuring booths, etc. This will be practically two stories in height, and the balance of the mezzanine floor will contain the clubrooms and general business offices of the association, which will include an assembly hall, clubrooms, cloakroom, directors' room, etc.

There will be first-class telephone service, including both systems of telephones, the necessary sound-proof telephone booths on the ground floor and extension phones in all the figuring booths. The auditorium will be finished in hardwood and marble, and will be furnished in a style befitting the dignity of the great building industry of the city, and we are pretty safe in saying that these will be the finest building headquarters in the United States. The privileges of the floor will be open to the architects at all times.

Above the mezzanine height there will be four floors of high-class offices, about twenty-eight to each floor, and the finish throughout will be marble, metal and hardwood, with the best of modern plumbing, etc. It is proposed to make this building the central point for the headquarters of the building industry of the city.



General Contractors Association Building, San Francisco
Geo. W. Kelham, Architect

Realizing the convenience of being in close touch with their customers and those with whom they are doing business, there is already a big demand for offices among the general contractors, specialty contractors and material men. A number of architects also desire to obtain offices in the building on account of its business convenience, and the top floor may possibly be designed to provide special lighting facilities for architects. From the present outlook there will be a waiting list for offices before the building is completed.

The building will be modern in every respect, with steam heating, vacuum cleaning system, electric elevators, etc. The building will be of reinforced concrete construction, with terra cotta facings. There will be a private entrance through the main entrance hall of the building on New Montgomery street, and a public entrance on Jessie street.

The entire building is designed for the business convenience of those connected with, or engaged in, the building business, and should prove a big financial success for the owners, and a benefit to the contractors.

* * *

Necessity for Exercising Care in Filing Building Contracts

By T. C. KIERULFF, Attorney.

THE decision of the State Supreme Court rendered last September in the case of David Condon, plaintiff, against Timothy Donohue, defendant and appellant, only serves to emphasize the necessity and the care required in preparing and recording building contracts between the owner and the contractor. No new point is decided in this case. Under the old mechanics' lien law the true consideration must be stated or the contract was void. The decision in this case is important, however, in bringing to the attention of owners and contractors the necessity of a strict compliance with the new mechanics' lien laws now in force.

Condon, the plaintiff and contractor, brought an action against Donohue, defendant and owner, to recover the reasonable value of labor and materials in the construction of a building. It appears that the owner and contractor had agreed upon a contract price of $33,000; the written contract specified the price at $35,000; the contract was duly recorded; immediately thereafter the contractor and owner entered into an agreement that the price should be $33,000; this agreement was not recorded. It is plain to be seen, therefore that the contract as recorded did not state the true consideration and under the law, as it existed prior to the amendment of 1911, unless the true consideration was stated it was wholly void and no recovery could be had thereon by either party. The contractor failed to complete the building. The plaintiff and owner completed the same at a cost in excess of $38,000 and he sought in this action by way of cross-complaint to recover from the contractor the difference between the contract price of $33,000, specified in the private agreement, and the amount actually paid out by him to complete the building. The judgment was that plaintiff take nothing and that defendant recover simply his costs. It was raised that the rights of the respective parties should be determined by the contract as amended since there were no lien claimants or persons interested in the matter, excepting the owner and the contractor; but as held by the Supreme Court in its decision the provisions of Section 1183 applied in this case, precluded any action on the contract in every case where there has been a failure to file the whole of the written contract. There is nothing in the opinion to intimate that the Court entertained the view that the omission was of such a nature that no right was in fact prejudiced thereby. Had the owner recorded the subsequent agreement there could have been no question as to a right to recover.

Under the mechanics' lien laws as amended at the last session of the Legislature a strict compliance of the same is absolutely necessary in order to afford any protection to the owner. It is not only essential to state the true contract price but the price must be fair and reasonable. For while the statute provides that it is the intent and purpose of the Section (1183 C. C. P.) to limit the owner's liability to the measure of the contract price the Court is not bound to do so, unless the contract price is fair and reasonably equitable. It is also necessary for the owner to require from the contractor a bond with good and sufficient sureties in an amount not less than fifty per cent of the contract price, which bond shall in addition to any conditions for the performance of the contract, be also conditioned for the payment in full of the claims of all persons performing labor upon or furnishing materials to be used in such work.

* * *

Comparative Cost of Fireproof Construction.

PHILIP H. Bevier, C. E., addressing a society at Orange, N. J., on "Fireproof Construction," gave the following interesting figures in regard to the comparative cost and arguments in favor of fireproof buildings:

"At the present price of building material, fireproof construction can be erected at a cost not to exceed 10 or 15 per cent more than non-fireproof, and when we consider that fireproof buildings deteriorate about one-ninth of 1 per cent per year as compared to 4 per cent for ordinary buildings; that they rent better and that money can be borrowed on them on better terms; that they are vermin-proof, cooler in summer and warmer in winter, it would certainly seem a part of wisdom and self-interest to adopt a better method in every case when the building is to be of a permanent character.

"When a man builds a house in the country, it may be that he has a right to jeopardize his own life and property and those of his family and gamble with the insurance companies, but there is no question that the owner of property in a city or town has no right to erect a structure which will be a menace to the safety of the property of the adjacent owner. This principle is clearly recognized in practice, and many of the smaller cities are adopting building codes requiring fireproof construction throughout a certain portion of the business section, and semi-fireproof buildings in less congested districts.

"If one-half of the money spent by American cities for fire losses was spent for better building construction, the annual loss by fire would soon begin to decrease. Improvement along the line of better construction can only come gradually. It can and should be hastened in thickly settled communities by stringent building laws. City officials must be awakened to their responsibilities and the individual shown that his own pecuniary interests lie in lessening the fire waste. Old buildings cannot be torn down at once and rebuilt, but we can see to it that no more firetraps shall be built where they are a menace to other structures."

* * *

Steel Columns Replace Concrete

ALTHOUGH it was not supposed to be a very severe shake, the sesmic disturbance in San Francisco a few weeks ago appears to have been of sufficient magnitude to damage one of the reinforced concrete columns supporting the water tank on the roof of the Blake, Moffitt & Towne building on Mission street, near Market. The column was crushed to the extent that the tenant would not consent to its being repaired. He insisted upon the removal of the damaged part, as well as all other columns that carried the tank, and the substitution of steel supports.

This building was only recently completed by the now defunct Standard Construction Company. What is known as the Kahn bar was used in the reinforcement—the same method of binding the concrete that was used in the construction of a five-story concrete building situated within a stone's throw of the Blake, Moffitt & Towne structure, and which suffered a partial failure about a year ago. In this building several of the interior columns were crushed, and it was found necessary to replace them.

San Francisco has, indeed, been remarkably free from concrete failures, due undoubtedly to intelligent engineering and the selection of a safe and practical method of reinforcement. The fact that Kahn bars were used in the only instances of trouble that have been called to the attention of the building public has become a matter of comment, and recalls to mind the collapse of the Hotel Bixby, at Long Beach, some years ago, when several workmen were killed and injured. Here, again, the Kahn system had been used.

* * *

We May Come to This Yet

"So you want a divorce, do you?" said the lawyer, peering over his glasses at the worried little man in front of him. "Yes, sir. I've stood just about all I can. My wife's turned suffragette and she is never home." "It is a pretty serious thing to break up a family, you know. Don't you think you had better try to make the best of it for a while? Perhaps it is only a passing fad." "That's what I have been doing, but there are some things a man can't stand. I don't mind the cooking, and I haven't kicked on washing the dishes, but I do draw the line at running pink ribbons in my nightshirt to try to fool the children."—Success Magazine.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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Meets Third Monday Each Month.

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San Diego Architects Organize

The San Diego Architectural Association has been formed with the idea of ultimately becoming a chapter of the American Institute of Architects. The officers are: W. S. Hebbard, president; S. G. Kennedy, vice-president; Irving J. Gill, secretary, and Chas. Quayle, treasurer.

San Francisco Chapter Fails to Indorse World's Fair Commission

By SYLVAIN SCHNAITTACHER. Secretary

The regular monthly meeting of the San Francisco Chapter, American Institute of Architects was held at the Tait-Zinkand Cafe on Thursday evening, September 21st. After dinner, the meeting was called to order by Mr. Mooser.

Mr. Faville for the committee on the Voorhies table, reported that the total amount of subscriptions had been paid and that the table was being put in condition for shipment.

Mr. Vogel for the committee on a form of contract between the architect and owner, submitted a written report and the secretary was instructed to have a copy of the same sent to each member so that it might come up for discussion at a future meeting.

Messrs. John J. Donovan and Edward W. Cannon were elected to membership.

The following communications were ordered received and placed on file: from Mr. Ira W. Hoover, his resignation from the Chapter owing to his removal from San Francisco; from the Board of Directors and Mr. Chas. C. Moore, President of the Panama-Pacific International Exposition Company, acknowledging the Chapter's letters of August 31st.

The next order of business was the nomination of officers for the ensuing year, to be voted upon at the annual meeting in October.

Mr. McDougall expressed regret that Mr. Mooser, after two years of most efficient service to the Chapter, had declined nomination for the next term; and that in view of this, he wished to nominate Mr. John Galen Howard for the office of President for the ensuing year. Mr. Howard's nomination was duly seconded.

Mr. Polk wished to nominate Mr. Wm. Curlett, but Mr. Curlett declined the nomination.

Mr. Matt O'Brien nominated Mr. Willis Polk, which nomination was seconded by Mr. Bakewell. This nomination was subsequently withdrawn.

Mr. Curlett placed Mr. Geo. P. McDougall in nomination for Vice-President, which nomination was duly seconded.

Mr. Devlin nominated Mr. Sylvain Schnaittacher for Secretary and Treasurer. Nomination was duly seconded.

Mr. Mooser nominated Messrs. Albert Pissis and Wm. Curlett for Trustees. Nominations duly seconded.

Mr. Clarence Ward was placed in nomination for President, but declined.

Only two slips were returned to the secretary with nominations which contained the name of Mr. Wm. Faville for Vice-President. Mr. Faville declined.

There being no other nominations, the following were declared the nominees for the ensuing year.

President, John Galen Howard; Vice-President, Geo. B. McDougall; Secretary and Treasurer, Sylvain Schnaittacher; Trustees, Albert Pissis, William Curlett.

On motion made, seconded and carried, the resignation of Mr. Ira W. Hoover was accepted with regret, owing to his permanent residence in Chicago.

Mr. Mooser as chairman of the Exposition committee of the Chapter, made a verbal report as to the Architectural Commission of the Exposition Company; gave the history of the Chapter's connection with the Exposition Company; the request of President Moore of the Exposition Company for the nomination of twelve names; the selection of Messrs. Howard, Curlett, Pissis, Polk and Ward to form a Temporary Commission; and the invitation extended to the five to make the permanent Commission; also the tentative adoption by this Commission of rules to govern the relations of architects to the Exposition Company. Mr. Mooser stated that up to this point the Exposition Company had carried out every suggestion of the Chapter. However, when it came to the appointment of a chairman of the Permanent Commission and a change in the rules governing the Commission, Messrs. Howard, Curlett and Pissis felt they could not consistently accept the invitation to make up the permanent commission and accordingly withdrew, after which the Board of Directors of the Exposition Company reduced the number of the commission to three and adopted the rules which would permit of the members of the Architectural Commission to design buildings. Messrs. Polk, Ward and Faville were made the permanent commission with Mr. Polk as chairman.

Mr. Faville as a member of the Exposition Committee was asked if he wished to make a statement with regard to the committee's report, but said he had nothing to add. Mr. Schulze made the same statement.

Mr. Howard was asked to give a statement of his connection with the Architectural Commission. He stated that the Architectural Commission, working with the special committee of the Exposition Company, had concurred on certain rules and had agreed that the temporary commission should organize itself. These conditions were reversed by the appointment by the Board of Directors of the

Exposition Company of a Chairman and the adoption of rules at variance with those suggested. The three members of the Commission who withdrew from the meeting felt they could not consistently serve under the conditions imposed and asked the Board of Directors to reconsider its action. The statement was made however, that the Board of Directors could not do this; and therefore, they withdrew from the meeting.

Mr. Howard took occasion to state that the withdrawal was no personal reflection on Mr. Polk, but a feeling that the Commission as constituted could not work harmoniously for the best results of the Exposition and also pledged his assistance to Mr. Polk to do what would lay in his power to make the Exposition a success.

Mr. Polk, replying to Mr. Howard, stated he had most sincere admiration for his confreres on the Commission and sincerely regretted the unpleasantness; but it was a matter of conscience with him in regard to the rules in question and that he had opposed the adoption of the rules in committee. He said he had no doubt that the Commission should have elected its own chairman, but no assurance of this could be expected from the Exposition Company. He stated he would not undertake personally to design any part of the Exposition; that he was not looking for friends or enemies in connection with the Architectural work of the Exposition but was only looking for architects and desired the backing of the Chapter and all the architects, toward making the Exposition a success.

Mr. Curlett was also called upon to make a brief statement and expressed no desire of putting any obstacles in the way of making a success of the enterprise.

It was duly moved and seconded that the Chapter unanimously endorse the appointment of Messrs. Polk, Faville and Ward to the Architectural Commission. A discussion followed and the matter voted out of order.

Architects' Chapter Annual Meeting

The fifth annual meeting of the Southern California Chapter of the American Institute of Architects was held Tuesday evening, October 10th. Officers were elected for the ensuing year, as follows:

President, John C. Austin.

Vice-President, Robert B. Young.

Secretary, Fernand Parmentier.

Treasurer, August Wackerbarth.

Director (three-year term), Octavius Morgan.

Director (two-year term), Albert C. Martin.

Director (one-year term), H. M. Patterson.

Under the new constitution one director will be elected each year to serve three years. This made it necessary to elect three directors, one to serve for three years, one for two years, and one for one year.

The retiring president, Frank D. Hudson, read the annual "essay," otherwise termed "address."

It was voted unanimously to take up a subscription among the members of the local chapter for the purchase of one of the best paintings of Norman St. Clair, who is well known to the architectural profession of Southern California by his splendid rendering of architectural perspectives. Mr. St. Clair has been in ill health for some time and has been unable to follow his profession. More than $200 was subscribed among the members present, and this amount will be increased by a canvass of the remaining members.

Personal

David J. Myers, president of the Washington State Chapter of the American Institute of Architects, was selected to represent that body at the International Congress of Architects in Rome, Italy.

Arthur T. J. Bennett, who was associated with D. H. Burnham in planning a new civic center for San Francisco, has completed drawings for the planning of Portland until it has attained a population of 2,500,000. The plans will be exhibited at once. Bennett is now in San Francisco, and it is understood will be engaged by the Exposition Architecural Council.

Architect George H. Wyman, of Los Angeles, has returned from a trip to Vancouver, Portland, Seattle and San Francisco. Mr. Wyman was particularly impressed with the amount of work being done by the northern cities in the development of public parks.

Architect Leo W. Barnett, of Edelman & Barnett, architects, will leave Thursday for a two months' tour in the East. Mr. Barnett will spend a week or two each in Omaha and Chicago, and a month in New York. Business and pleasure will be combined.

Olmstead Quits in a Huff

John G. Olmstead, the landscape architect, has resigned his position on the San Diego Park Board, and work on the exposition grounds will be delayed. Mr. Olmstead said he could not bring himself to agree to the shifting of the site of proposed exposition buildings as suggested by the Exposition board, to a point in the big playground. He said it would ruin the grounds and locate the buildings at a point entirely at variance to artistic ideas. The board had accepted his plans but later reconsidered, and Olmstead now tells the board to get another man.

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LOWEST BIDDER ENTITLED TO CONTRACT

A firm of contractors in Ohio have entered suit against an architectural firm in Cleveland for specific damages because as they allege, the architects concealed their bid from the owner and let the contract to a higher bidder. Custom has established and the implied, if not specified purpose of a bid is, to give the work to the lowest bidder. There is no general law as far as we know or court decision which makes this obligatory unless specified by pre-contract. Architects have been accustomed, when they thought it advisable, to ignore the lowest bid in the interest of good work, and the only penalty is the criticism of the disappointed contractors and perhaps a certain amount of favoritism as the inference is that the work shall go to the lowest bidder. To avoid even the implication of unfairness the list of bidders should be selected and the lowest bid taken, otherwise the contract should be let to a selected contractor without competition. The argument is made that an architect should not have on his list the name of a contractor to whom he would hesitate to award a job in case his figure was lowest. To this assertion architects claim that influence is brought to bear upon the owner and the architect is obliged to invite certain contractors to figure the work, no matter how objectionable they may be to him. If these fellows happen to bid low there is bound to be friction with the architect in signing up.

Western Architect editorially says it is the height of unfairness, even if not legally wrong, for a bidder to be asked to go to the time and expense of figuring and then fail through no fault of his bid but through the caprice of the architect. Chicago contractors have not forgotten the experience the brick contractors were put to in figuring the Marshall Field Wholesale Building, which, without warning was changed to granite through the caprice, and some charged the delib-

erate intention, of the architect to build of granite and who only wished the brick figures for comparison.

A PREMIUM FOR FIREPROOF CONSTRUCTION

Many towns are today offering special inducements to attract new industries. They make a practice of offering free factory sites, free water or exemption from taxation for a term of years to prospective manufacturers. It would seem to be of equal public benefit to offer concessions to obtain fireproof building construction. Each new structure would act as a fire stop, and ultimately fire fighting costs would be greatly reduced. The lowering of insurance rates alone is often not enough of an incentive to owners to adopt the safest construction, but the municipalities might readily offer the additional influence, perhaps, of a moderate tax reduction which would bring about a revolution in building construction.

At present we are saddling future generations with an ever-increasing burden for fire protection made necessary by non-fireproof construction. If it were made an advantage to owners to build fireproof, it would in the end result in a decided saving, through the decrease of unproductive fire-fighting costs. In even a greater measure it would afford a needed protection to life and property.

ERNEST FLAGG, CRITIC

Ernest Flagg, the distinguished New York architect, has got himself in the limelight by criticising the American skyscraper in particular, and American architecture in general. Flagg considers the American people veritable barbarians in matters of taste, with an artistic sense lamentably undeveloped. Of course this radical extremist excludes his own work from criticism, notwithstanding the fact that said work is not all in keeping with his professed ideals. There is an adage about throwing stones when you live in a glass house that Flagg might well apply to himself. However, it is not likely that the New York architect's wailings will lessen the present tendency to build high structures, for as long as there is a demand for them owners are going to build them, particularly in congested sections where land is at a premium.

It seems to us that Flagg would have accomplished something if he had made a plea for fireproof buildings and side-stepped the matter of height. A tall building constructed of inflammable material is unquestionably a menace to life and property, and ought not to be tolerated. When we eliminate the combustible building objection to the skyscraper will cease. As to beauty in American architecture, be the building high or low, we can but reiterate our sentiments in the September number: It depends entirely upon the quality of the art put into it.

Plans of World's Fair Architectural Council

By Willis Polk, Chairman.

The first work of importance to be taken up by the Architectural Council of the Panama-Pacific Exposition will be the development of the general plan of a site. This is the most serious and important of all the work of design in connection with the entire exposition, and upon the success of this general plan will depend the success of the project.

The location of every building, all roads, disposition of garden and landscape effects, the placing of monuments and other decorative features will be most carefully considered, so that when work begins every unit in the whole composition will be placed with a view to its relation and harmony with other units.

It is the commission's idea to surround itself with the greatest architects, painters, sculptors, landscape gardeners, and engineers that we can possibly secure. We are aiming for the very finest and highest result, and hope that practically every dollar of the exposition money will be expended wisely and bring results that will reflect to the glory and credit of the city. In this way, and in this way only, will the world recognize and admire our energy, our pluck, and our expenditure of hard cash.

Municipal and State Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

The Value of Motor Fire Apparatus*

By Louis Behrers, Chief of Charleston (S. C.) Fire Department.

IN discussing the use of motor fire apparatus I shall not dwell on the merits of any particular make, or the superiority of one design over another, but would suggest that only machines of sufficient horsepower, not less than ninety for fire engines and not less than sixty for combination wagons and chemical engines, be selected. The more horsepower a machine has, the more efficient work will it accomplish. There is no question that the motor engine has many advantages over the horse-drawn apparatus, and I wish to emphasize some of these advantages that occur to me as most worthy of consideration.

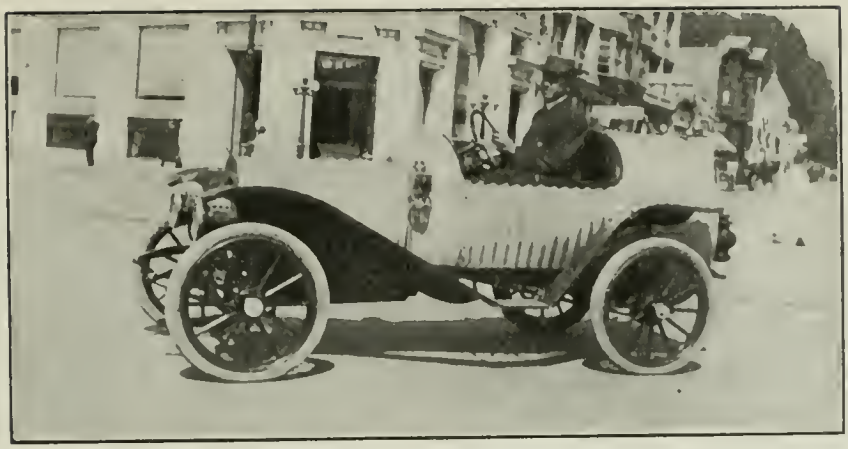
The first to be considered is the high speed of the motor apparatus in reaching fires. This is very important. Soon after Charleston's motor fire engine was commissioned came the first opportunity to test its speed efficiency and superiority under practical conditions. On the night of October 25, 1910, a one-story warehouse of the Atlantic Coast Line Railroad Company, a building of an area of 50 x 200 feet, with inflammable contents, took fire, the flames gaining considerable headway before the alarm was sent in, and being a mass of fire when the first apparatus arrived. Almost adjoining this shed, and distant by the width of a street, were the large freight depots, filled with cotton, hay and other combustible materials. In this street was also a box car loaded with cartridges and powder. The eaves of the depot were catching and the sides of the car were ablaze when I reached the scene simultaneously with the motor fire engine. This engine took the hydrant about fifty feet from the burning building, connections were made and the hose run out almost instantly. With the turn of the lever the motor was connected with its pump and two strong streams were soon playing on the igniting depot and burning car, which were saved by this promptness, for in three or four additional minutes, when the steam engines began to play, it would have been too late, and the property damage would have been very great.

The second advantage which comes to mind is the ability of the motor fire engine to answer any number of alarms coming in close succession. Whereas, with the horse-drawn apparatus, a succession of alarms is nothing short of a calamity. Two or three alarms in close succession impose a great strain upon engine horses, which are generally exhausted by the third call, and cannot render adequate service.

A third striking advantage of the motor engine is its ability to throw water with almost no loss of time. On arriving at a fire it is ready for use, regardless of the distance traveled, whether long or short. The man who drives the motor is engineer and stoker as well. As soon as connections are made at the hydrant the motor is ready for pumping water under any pressure desired, and maintain a uniform stream for an indefinite period. Consequently, in a majority of instances, where there is a motor engine used with steamers, the motor machine will throw from 1000 to 2000 gallons of water on the fire before serviceable streams can be gotten from the steamers, and that supply of water will often hold in check most effectively a blaze until steam engines arrive with reinforcements.

The question naturally comes up, "What is the life of a motor fire engine?" It is not yet practically determined. But it may be fairly estimated. The average fire apparatus will travel approximately from 250 to 300 miles in a year in cities of about 60,000 population, or nearly 6000 miles in twenty years; while the motor apparatus, not being taken out to "exercise" twice a week, travels from 120 to 150 miles a year. Not only that, but to estimate from a ten-year average of the steamer's fire-pumping, I figure out that a motor fire engine will have to pump for only about ten hours per year, therefore, judging from the mileage and endurance of the touring car which I use in responding to alarms, inspecting buildings, visiting fire stations, etc., a car yet giving excellent service, which has traversed 4500 miles in the past year, and fully 17,000 miles in the past four years, I see no reason, as the motor apparatus

*A paper read before the South Carolina State Firemen's Association.



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is constructed along lines for practical fire service, and is built much stronger than the average car used by chiefs, why the motor apparatus should not, with no more repairing than the ordinary steam apparatus, serve effectively for ten or fifteen years. This is an estimate which I make from practical observation.

The Charleston department has used a motor fire engine for over nine months with satisfactory results. This engine was built by the Webb Motor Fire Apparatus Company, and is a ninety-horsepower, six-cylinder Thomas motor machine, equipped with a rotary pump of a capacity of 800 gallons per minute at plug pressure; it carries a crew of eight men, 1000 feet of hose, axes, ladders, extinguishers, pipes, etc., and has been in commission since October 1, 1910. It has not failed to respond to any fire, and has answered sixty-six alarms and traveled ninety-three miles, pumping at fires nine hours and fifty-one minutes. The cost to maintain this machine, for gasoline, cylinder oil, grease, spark plugs, recharging storage batteries, etc., has been $52.10, or 19 cents a day. The tires show no material wear, and have yet to experience their first blow-out or puncture.

To accomplish this motor engine's work for nine months, using horses, would require four animals, which cost to maintain, for oats, hay, veterinary services, harness repairing and shoeing, about $15 per month per horse, a total of $540 for nine months. Coal for boiler would cost $15 per month, or $136 for nine months. This means a maintenance cost of $675 for the steamer. Comparison shows a saving to the city of Charleston of $622.70 in nine months in the use of the motor apparatus.

We also save the salaries of two drivers, one on the steam engine and one on the hose wagon, and of a stoker, at $65 per month each, or a total of $1755 for nine months. Of the four engine and hose wagon horses, worth $300 apiece, one is lost by death, accident or unfitness for service every three or four years, making an additional cost of $100 per year. In comparison of totals for nine months' use of two types of apparatus there appears a balance in favor of the motor engine of $2,447.90 in nine months, or $3,303.72 in a year. Think of a saving like this in nine months, and you cannot but agree with me that the motor apparatus is wonderfully economical. I have not in my comparison of maintenance cost included repair expenses for either apparatus, estimating that this item of upkeep will average about the same for each.

While the first cost of the self-propelled apparatus is greater than that of the horse-drawn equipment, the difference is made up in a short time after purchasing the motor engine by low maintenance and operating expense. Yet it appears to me that the economy of the motor engine is a minor argument in its favor, for, after all, it is efficiency we want, and I believe that you will all concede that quick action is the most essential feature in fire fighting, and when we take into consideration the fact that the motor apparatus will make a run in less than half the time required by the steam engine, then it is that its real value comes home to us.

With these advantages of the motor fire engine in view, not to mention others that could readily be cited, when we consider its facility for speedy response to alarms, its ability to respond to any number of alarms in close succession, its quick water-throwing power, and its capacity for long service, we can but feel compelled to advise the installation of one or more pieces of auto apparatus by every fire department.

I would advise cities planning to place motor apparatus in their fire departments to station this apparatus along with the horse-drawn equipment in the congested business districts, and have it respond to some of the calls from the outskirts as well. That method is the quickest and best way to try the auto engine out and to overcome any difficulties that experience might anticipate.

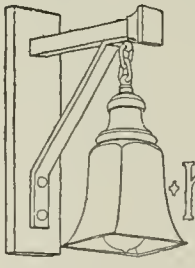
And now a word about the care of the motor engine. Proper lubrication is one of the most essential factors for good service. The very best lubricants should be used, care being taken that the engine oil contains as little carbon as possible, a result obtained principally by filtration. The transmission oils and grease for the running gear should be free from acid. Strained gasoline of the best quality should be used, for the cheaper grades produce carbon. The tires should be given the best of attention, and be kept properly inflated at all times, cuts being treated with cement preparation, as this adds to the life of the tires, which, when properly inflated, are less susceptible to punctures.

Driving a motor engine at a speed greater than twenty miles an hour through city streets does not pay, as the small amount of time saved by fast driving does not warrant the risk of accidents incurred. In regard to the men who handle the engine, I have found that it does not require experts. Any cool, sober man, with ordinary common sense, and with some knowledge of machinery, can learn to drive and operate a motor engine with the training of some two or three weeks.

In conclusion, I wish to say that I feel that Charleston is well pleased with the motor fire engine. As a matter of fact, I have recommended that our city order a motor combination chemical and hose wagon in the near future. But the motor apparatus has not reached its fullest development, as a matter of course. The motor fire engine pump, as constructed today, while giving excellent service and no trouble, can, I believe, and will be improved upon shortly, so that the water-throwing capacity of the motor engine will compare favorably with a first-size steamer. Manufacturers of fire apparatus in this country have been watching carefully the progress of the gasoline motor fire engine for the express purpose of introducing this type of apparatus into fire departments, and they will no doubt soon see that the pump is brought to its proper power. I would advise you not to discard steam engines, but to keep them all, and as soon as opportunity offers, to put in one or two pieces of motor apparatus, and give the auto engine type a fair trial, arriving at your own conclusions as to its value.

Boston Uses Soap and Oil

The city of Boston is now sprinkling the entire city with an emulsion of asphaltic oil made by dissolving 25 pounds soap in 100 gallons of hot water and mixing this with 200 gallons oil. One hundred gallons of this emulsion is diluted with 500 gallons of water in the wagon and spread, using an ordinary Studebaker watering cart. The first application is followed by a second in four days, after which the street is gone over again once in from fifteen to thirty-five days, depending upon the weather and conditions. This was found to give excellent results, both as to laying the dust and preserving the roads. Last year the amount of dust swept from the streets was reduced 50 per cent. The only objectionable feature is the condition of the road for the first two or three days after sprinkling, as the heavy black oil forms clots which are picked up by carriage wheels, etc. After it is beaten down, however, the roads have a smooth, hard, and clean surface.



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Economy of Concrete Bridges

A municipality in New Hampshire recently obtained a satisfactory concrete bridge for less than $75,000 after being told it would cost from $150,000 to $225,000. It is altogether likely, says Cement Age, that many individuals, if not communities, have been deceived by superficial cost estimates of this character. Had these New Hampshire taxpayers accepted the first statements without question, they would have had a steel bridge costing almost as much as concrete, plus an annual maintenance tax that would soon exceed the difference in the first cost of the two types, and a tax that would continue indefinitely, or during the life of the bridge. It is the popular impression that concrete always costs more than other materials, but the situation has been entirely reversed in more than one instance. Especially has this been the case in bridge construction. In the case of a certain bridge in Philadelphia, concrete was substituted for steel at half the cost of the steel. This was an unusual case, perhaps; but even at anything like equal first cost, concrete has the advantage of low maintenance charges. Furthermore, the labor and materials, except perhaps cement, are usually obtained in the locality, thus keeping in the community a large share of the money expended. Therefore, as a matter of precaution, cost estimates on concrete should never be accepted as final, unless made by an engineer or contractor thoroughly conversant with the subject and entirely free from all prejudice against concrete.

Best Pavement for Steep Grade

L. S. Cooper, city engineer of Yonkers, N. Y., writes to Municipal Engineering as follows: "I note in your issue an inquiry as to the best material for a street improvement from a safety point of view with a grade of 10 per cent. Perhaps our experience in Yonkers, which is a very hilly city, may help answer this inquiry.

"We have tried all the standard pavements except wood, and we find that granite is too slippery for grades over 8 per cent. We use macadam on most of our hilly streets, but we have had very satisfactory results with bitulithic on grades up to 11 per cent. One street paved with bitulithic on this grade is now ten years old and in good order. The only thing that has been done to it since it was laid, was to cover with coarse screenings the first year or two where the bitumen showed a tendency to work to the surface in very warm weather. For light traffic I consider this pavement excellent up to 10 per cent grades, and I know of none better."

Good Roads Notes.

Good roads contribute to the glory of the country, give employment to idle workmen, distribute the necessaries of life, the products of the fields, the forests and factories, encourage energy and make mankind better, greater and grander.

* * *

An officer of the Ohio Good Roads Federation expresses the situation tersely in the following words:

"The cry for good roads in Ohio, once a feeble wail, is now taking on the proportions of a roar. All interests are beginning to see that Ohio must join the procession of modern States and improve its highways in order to boost its agricultural, bring down the cost of living in the cities and give the farmer a chance to market his goods when the time is ripe, and not be compelled, because of mud holes, to pass up good prices and wait for weather that will dry water-soaked highways."

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Heating Homes in a Way to Insure Ventilation*

I WISH to make a little talk to the architects concerning the subject of the heating of residences. There is nothing more valuable to an arhcitect in his profession than to keep up with the latest developments in the construction of buildings provided those developments are along sound, safe and conservative lines.

I believe that the time has now arrived in the United States when there will be increasing attention paid to the ventilation of residences, and I believe that the architect who is up to the times will certainly specialize in the future along the line of ventilating—the human habitations which he plans and erects for his clients.

There are but two methods of heating that lend themselves to ventilation as a part of the heating proposition—direct heating on the one hand and indirect heating on the other. Indirect heating consists of pouring warm air into the apartments of a building for the sake of warming them. Direct heating means the heating of the apartments by means of radiators—hot surfaces located in the rooms to be heated. Direct radiation heating I am convinced will not be the permanent form of heating that will be applied in residences or in any other buildings for that matter.

*Extracts from an address by Chas. S. Prizer at Seventh Annual Convention National Association of Sheet Metal Contractors.

Steam and hot water heating have their proper place but in their direct form they are unsanitary because they involve a negation of ventilation. It is impossible to heat a building by direct radiation located in the rooms thereof and at the same time ventilate that building. It is impossible to have a healthful winter climate in your home provided that home is heated by any form of direct heating, be it stoves, radiators or any other method of direct heating. Therefore the system of heating that ought to be applied to residences is indirect heating.

There are but two practicable methods of ventilation that can be secured through indirect heating. The one is indirect steam heating where the stacks are located underneath the rooms to be heated, and the air is poured over them into the apartments to be heated and necessarily in heating the apartments you are changing the air in the room constantly.

The other method is that of the warm air heater or the warm air furnace method of heating. These two methods are equally meritorious if they are each one right, with this difference—a modern refinement of heating which will probably grow as people get to a fuller understanding of the hygienic principles involved is the humidification of air in rooms artificially heated. Indirect steam heating does not readily adapt itself to the artificial humidification of the air. That artificial humidification can be had very much better in connection with fur-

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nace heating, but with that eliminated there may be said to be no difference as to the merits of heating a building indirectly by steam or by the warm air furnace method, provided both are well done. However, there is this very great difference—a complete indirect system of steam heating is very costly to the installer. Most indirect work that is done in residence heating today only applies to some rooms in the building; whereas it is perfectly apparent the sleeping chambers and baths and all of the different apartments in a house should be ventilated.

Steam indirect heating is expensive to install and it is proportionately even more expensive to operate, the fuel cost being at least double the fuel cost of operating a warm air furnace heating plant; in fact, complete indirect steam residence heating is so expensive as a proposition that it does not apply to a great majority of the houses that are built from year to year in the United States, and even well-to-do people when they know what it costs to install and to maintain, are reluctant to put themselves under the burden of that expense, but warm air furnace heating, if it be properly done, fulfills every hygienic and scientific requirement of the perfect heating and ventilating plant. It is reasonable in its first cost, for you can do an absolutely first installation of warm-air furnace heating in connection with formal ventilation at no greater expense to the owner of the building than he would pay for a system of direct steam radiation heating which is unscientific, unhygienic and indefensible. At the same time one has every advantage that he could possibly get from the more expensive methods, provided the installation is correct, the apparatus is what it ought to be and the proportioning of the whole system is right, and that, by the way, is a very large proviso.

Big Concrete Bridge.

The engineering firm of Waddell & Harrington of Kansas City, has been awarded a contract by the city council of Pasadena to prepare plans for the new reinforced concrete bridge to be built across the Arroyo Seco at Colorado street. The city of Pasadena has voted bonds in the sum of $100,000 and the board of supervisors will appropriate an additional $100,000 for the project. Of this sum of $10,000 will be used for engineering fees, leaving $190,000 for the actual construction work on the bridge. The contract with the engineers provides that the plans be completed in 40 days and it is hoped to begin actual work within 90 days.

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San Francisco Architects Are Busy

The election of Rolph has created an easier and more hopeful feeling in San Francisco banking, real estate and building circles, and the building outlook is brighter than for many months.

Architect L. B. Dutton has completed plans for a $70,000 apartment house to be erected at California and Hyde streets, for J. Warren Dutton, of Sacramento.

Architects Welch & Carey have a $35,000 anartment house and a two-story reinforced convent to be erected at Livermore.

Arhitecct D. C. Coleman has made plans for a $75,000, class C apartment house to be erected by William Helbing, the well known contractor.

Architect Charles Peter Weeks has a hotel to be erected on New Montgomery street, and a store and loft building for Second and Howard streets.

Architect Henry C. Smith has several apartment flats and a six-story class C hotel.

Architect William H. Weeks has a two-story class A building for Dr. Wayland, to be erected on Post street adjoining the Mechanics Library building. This structure will eventually be nine stories high.

Architects Cunningham & Politeo have a large reinforced concrete garage to be erected on Van Ness avenue.

Architect G. A. Lansburgh has a seven-story hotel, a two-story brick warehouse and several smaller jobs.

Architects Righetti & Headman have a seven-story reinforced concrete hotel to be erected on Geary street near Taylor, and a four-story store and loft building, besides considerable smaller work.

Architect C. A. Meusdorffer has an apartment house and the reconstruction of the Eagle brewery, which was destroyed by fire recently.

Architect Will Shea is making plans for additional buildings for Santa Clara College; also an addition of two stories to the Bank of Italy building.

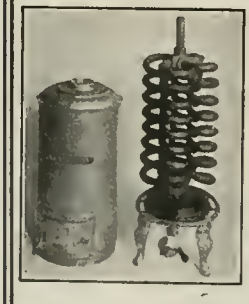
Architect B. G. McDougall is letting contracts for the Standard Oil Company's eight-story building, and a $100,000 Episcopal church.

Architect Lewis Hobart has let part of the contracts for a group of new buildings for St. Luke's Hospital, to cost $400,000.

Architects Julius Krafft & Sons have let contracts for the new Mt. Zion's Hospital, to cost $200,000 or more.

Plans for Pacific Grove City Hall

The trustees of Pacific Grove are calling for plans for a City Hall to cost $9500, and to be built of reinforced concrete.



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Clay Interests to Have Big Show

To prove to the public the superiority of burned clay and to demonstrate the wide and varied uses to which clay products are put, a Clay Products Show will be given at the Coliseum, in Chicago, March 7th to 12th, 1912.

The manufacturers of clay products are vitally interested in this exposition, and should freely give it hearty support both in advancing its interests and in arranging to exhibit. The sole aim of the enterprise is to strengthen the standing of clay products with the public.

In the building trade the fire loss in the United States has reached a stupendous figure, and it is time the public is shown forcefully that the use of burned clay building material will cut the fire loss to a fraction of its present total. If nothing more were accomplished by the Clay Products Show than that the public would be brought to a realization of the superior advantages of burned clay as a building material, the accomplishment would be well worth all the effort. But the scope of the Clay Products Exposition will be extended to every branch of the clay trade and every article made from clay will be brought forcefully and favorably before the people.

The following associations have signified their intention to hold their annual conventions in Chicago during exposition week:

The National Brick Manufacturers Association.

The National Paving Brick Manufacturers Association.

The Building Brick Association of America.

The Clay Machinery Manufacturers Association.

The American Ceramic Society.

The Illinois Clay Workers Association.

The Middle West Clay Workers Association.

In addition to these conventions other associations allied to the clay trade are invited to hold their annual conventions in Chicago during the exposition.

Los Angeles Office Building

Architects Edelman & Barnett of Los Angeles, have drawn plans for an eleven-story, basement and sub-basement, class A office building to be erected at the northwest corner of Fourth and Hill streets for the Black Fireproof Building Company. The new building is estimated to cost $450,000. It will be 60 x 165 feet and will contain thirty offices on each floor. There will be two light courts facing on Fourth street to provide outside light for each office. The first story will probably be occupied by a bank and stores. The construction will be of reinforced concrete with glazed terra cotta exterior.

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Architecture in Our Public Schools

We learn with much interest that it is proposed by the Board of Education of Los Angeles, Cal., to invite certain architects of that city to submit tentative plans for organizing an architectural department in the public schools. This is the first instance that we can recall wherein architecture in its elementary form has become a part of the curriculum of the public schools. It is gratifying to know that the work carried on for a number of years by the architectural societies is to be supplemented at least to some extent in the public schools.

Probably nothing has more generally retarded the advance of good architectural design than the ignorance of the masses concerning its value, and if the cardinal principles of good design and construction can be instilled into the minds of the public school children it will not be many years before much of that woeful ignorance that is now displayed will be supplemented by a higher and broader view of those features that contribute to the wise upbuilding and development of our cities and towns.—American Architect.

Oakland Architectural Club

The Oakland Architectural Club held its regular annual election on Monday, October 2d. The following officers were elected: Hart Wood, president; Edwin B. Mead, vice-president· Edwin J. Symmes, secretary-treasurer; also E. W. Cannon. G. C. Meeker and Oswald Speir, directors.

On Monday evening, October 16th, the club held a social meeting for men only.

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By the Way

Some Industrial Information Worth the While

Waterproof Stains for Concrete Structures

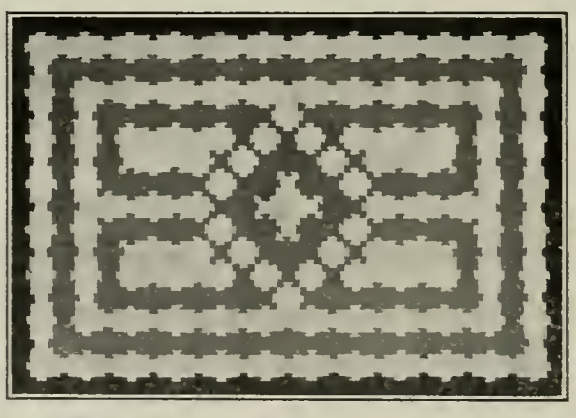
Samuel Cabot, Inc., of Boston, Mass., have just published a new catalogue illustrating their waterproof cement and brick stains, for concrete work. Unquestionably the two greatest problems that have heretofore confronted the architect of concrete structures, have been waterproofing and coloring. The fact that concrete is extremely porous and needs to be water and damp-proofed is apparent to all who have had any experience with this material. A cold and cheerless monotony of color has also been a drawback with those who, otherwise, would use cement in their building operations. But Cabot's stains have come to correct both of these defects, and their new booklet tells part what these stains will do.

The base of these stains is a waterproofing compound which penetrates into the pores of the cement and seals them, completely excluding the rain. This compound is not affected by the action of the weather, as it is composed of materials that cannot oxidize or otherwise decompose or disintegrate, and, as above stated, its permanence has been proved by over twenty years' use in our brick stains. The waterproofing is therefore not only perfect, but is also permanent. Where waterproofing only is desired, without color, the clear waterproofing compound, No. 400, is used.

The stains are made in a great variety of beautiful colors and shades, and almost any shade can be made to suit the requirements of special jobs. The colors are produced by the use of the strongest and most durable pigments, like those which have given such universally satisfactory results for over twenty-five years in Cabot's shingle stains. These pigments are so strong and finely ground

THE ORIGINAL

INTERLOCKING RUBBER TILING



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that they sink into the surface of the cement and color it without coating over and spoiling the material texture.

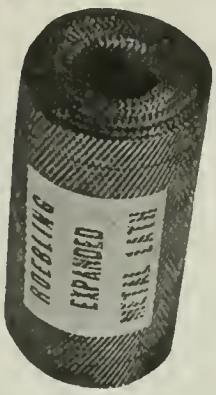
Ceresit Waterproofing for New Times Building

The Ceresit Waterproofing Company of Chicago, represented in California by Parrott & Co., announce a shipment of 10,000 pounds of Ceresit waterproofing to Los Angeles, to be used for waterproofing the foundations of the new Times building. The new structure will replace the building blown up presumably by striking laboring men a year ago.

Architects Chapter, A. I. A.

The Institute members of the Southern California Chapter, A. I. A., at their September meeting, endorsed the ticket proposed by the Philadelphia chapter for officers to be elected at the forthcoming convention of the A. I. A., at Washington. This insures the ticket being placed on the ballot. Following are the candidates: For president, Walter Cook, New York; for first vice-president, R. Clipston Sturgis, Boston; second vice-president, Breck Trowbridge, New York; secretary-treasurer, Glen Brown, Washington; auditor, T. J. D. Fuller, Washington; directors for three years, Irving K. Pond, Chicago; John M. Donaldson, Detroit; Edward A. Crane, Philadelphia.

THE ROEBLING CONSTRUCTION Co's



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Concrete Freight Sheds.

S. C. Payson of San Diego, agent for the Santa Fe, is authority for the statement that his company will within 60 days begin the erection of two large reinforced concrete freight sheds to cost $200,000. They will be built on the blocks between California and Atlantic and F and H streets, San Diego. Contractor C. A. Fellows, Central Building, will do the work.

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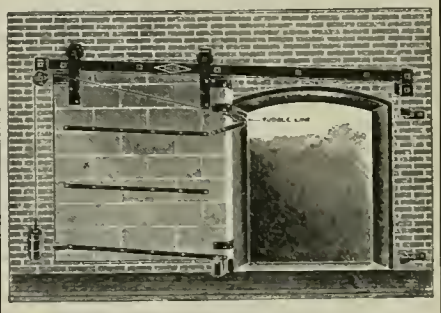
Tin and Metal Tile Roofing

"Other materials have come and gone; others will come and go; but tin, with its record of four hundred years in use, has and will survive them all."

Prefacing its interesting catalogue on tin and metal roofing tile, one of the large and well known manufacturers of this class of roofing thus expresses its faith and its confidence in the future of terne plate and tin coated roofing materials.

Not to be outdone in ingenuity, the older manufacturers of tin plate roofing have extended their field of manufacture, adopting modifications of their fundamental roofing ideas, and working them out in various metals. Today we have tinned iron sheets and a great variety of metal tiles and slates made from galvanized iron—itself a combination of iron foundation with zinc and tin covering. Thus these older manufacturers have kept up with the procession and are retaining a goodly share of the roofing business, being able to satisfy those whose desire for something novel, something different, can be met with due consideration in the matter of inroads upon the pocketbook.

In California, particularly, where the Mission and Spanish ideas and sentiment partake more of a faith than a fad, galvanized metal tile roofs are popular, and



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CEMENT TESTING AND INSPECTION

Reports and Estimates on Properties and Processes

becoming more so, in that they in fair measure carry out the Mission and Spanish sentiment at much less expense than the costlier material used by the old Spanish settlers and padre builders.

In many cities and small towns of California may be seen schools and other public buildings, and not a few residences and other structures, covered with these metal tiles. Typical portions of some of these roofs are seen in the accompanying illustrations. And if advertising through handsomely engraved illustrations, printed in the catalogues of eastern manufacturers, helps spread the fame of California's attractiveness, as it undoubtedly does, California is well advertised in at least one such channel; for there predominates in the new Handbook of Meurer's Metal Roofing Specialties, a finely printed book of 138 pages, striking views of California architecture, offset by typical California landscape.

Meurer Brothers are represented in California by A. H. MacDonald, of San Francisco, and F. H. Allen, of Los Angeles.

Plans for Improving Nevada University Buildings

Plans for extensive improvements to the University of Nevada buildings at Reno have been received by President J. E. Stubbs, from Architects Bliss & Faville of San Francisco. All the present buildings will be remodeled to correspond with the new MacKay Mining building, and several new structures will also be erected, including a $250,000 library.

A Fireproof Partition

H. G. Clinton of 34 Ellis street, San Francisco, is handling the Rabbitt Partition which has recently been given several very severe fire tests in the East with splendid results, and in consequence has been indorsed by the fire underwriters. The partition is not only fireproof but it is vermin and sound proof. Some of the advantages claimed for it are the following:

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Space saver. Takes 2¼ inches. Saves 3¼ inches on each partition.

It does not warp and crack in a fire as does channel iron, and costs 45 cents a square yard LESS.

It does not peel off in a hot fire as does the wood stud with metal lath, or carry the fire and smoke from floor to floor, and costs 20 cents a yard LESS.

It weighs less per square foot than any other partition.

It does not DRY ROT, as there is no dead air space.

The wood and cement plaster form a monolithic slab, which will withstand a pressure that would break down a brick or block partition double its thickness.

Follansbee Roofing Tins

Follansbee Brothers Company, of Pittsburg, have published an attractive booklet entitled "Tin Plate," and illustrating their products, including the well known and popular hammered open hearth, bright and roofing tin plate, also a splendid line of fine steel sheets, deep stamping sheets and polished sheets. The catalogue is profusely illustrated and will be mailed free upon application. Follansbee Brothers take especial care in having its roofing tin plates evenly coated, closely inspected and properly assorted. The book contains illustrations of many prominent buildings that have been equipped with Follansbee tin plate.

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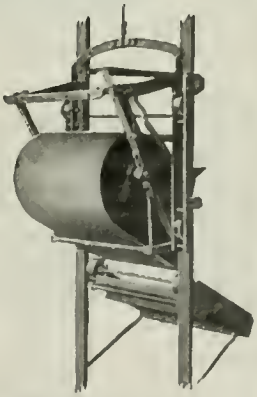

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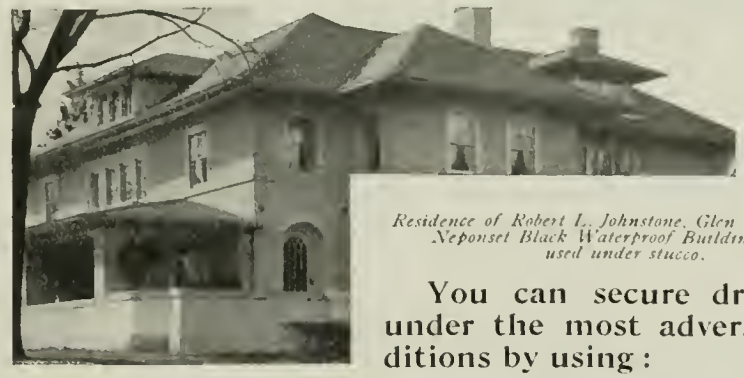

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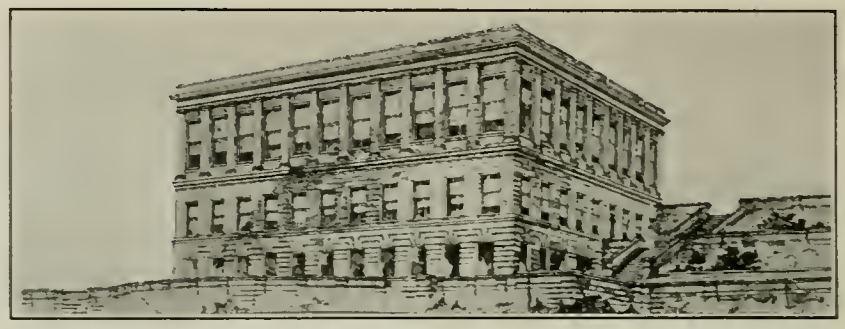

CLIFF HOUSE, San Francisco. Reid Bros., Architects. Interior Decoration by
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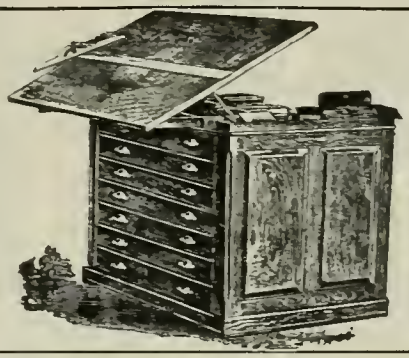

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J-M Waterproofing Materials

Among the many different brands of waterproofing materials now on the market, the H. W. Johns-Manville Co., are offering a line of fabrics, felts, cements and coatings known as J-M Waterproofing Materials.

These materials which are the result of this firm's half century of experience, careful study and unexcelled facilities, are especially made to meet every condition in waterproof building construction and have been effectively used for waterproofing underground tunnels, walls of brick and concrete buildings, dams, reservoirs, swimming pools, etc., with much success.

J-M Waterproofing Fabric is strong, loosely woven burlap impregnated with pure asphalt. The asphalt not only clings, but becomes locked into the fabric, and it is claimed that a few layers of this fabric makes a waterproofing course of great strength, ductility and elasticity that remains intact and resists moisture even when cracks occur in the cement work.

J-M Waterproofing Asbestos Felt is made of pure asbestos fibre, thoroughly impregnated with pure asphalt. The fabric, being composed of only mineral substances, contains nothing to decay or deteriorate, and is therefore well adapted for waterproofing all exposed and foundation construction work. In addition to being waterproofed, it is also positively acid, mould and rot proof. The asphalt is of a peculiar nature, and has wonderful cementitious characteristics. It is used cold and hot and does not run, shove or creep, and will not become brittle in high or low temperature.

This combination produces a waterproofing fabric that is especially serviceable where continual dampness prevails.

One of the most perfect water and dampproof materials made by this concern is their J-M Waterproof Coating. This is a combination of carefully selected materials of the highest grades, which, when applied, makes a film impenetrable by moisture. Aside from being inexpensive, it does away with furring and lathing and makes a positive bond between plaster and brick or stone walls. This coating protects plaster

THE ORIGINAL

BAY STATE BRICK AND CEMENT COATING

is a perfect coating for concrete, stucco or brick. It will protect concrete, brick or stucco against disintegration or hair cracking from moisture, give it any shade desired, can be used as a finishing coat instead of plaster on concrete walls, is applicable also to interior woodwork and for interior decoration, has been endorsed by the National Board of Fire Underwriters as a fire retarder and will therefore lessen your insurance rate. It does not destroy the distinctive texture of concrete. Will not drop off when applied above delicate machinery.

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Eagle Apartments, San Francisco

O'Brien Bros., Architects Klenck & Muller, Contractors

This Apartment House is faced with Golden Gate Brick Co. No. 17 Buff Clay Pressed Brick with Grey Cement Trimmings. It is located on Eddy St., near Larkin, San Francisco, in the Fashionable Apartment House District, and has been greatly admired by both architects and property owners.

The Golden Gate Brick Comp'y, C. F. Pratt, Mgr., manufacture every kind of brick from White Enamel Pressed Brick to the Common Red Brick.

A letter to

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will receive prompt attention

from strains due to dampness, also from discoloring by fireproof tile walls. Damp cellars and walls coated with this coating are made clean, sweet and useful.

This concern has issued a little booklet explaining fully the merits of their waterproofing materials, which they will gladly mail to any one on request.

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Is better than marble; is more durable; is more beautiful; is 75% cheaper in cost; is installed in the handsomest bank buildings in the country; is what you *should* have. *If you are going to build, investigate SCAGLIOLA.*

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68 CLARA STREET, SAN FRANCISCO

Captain Hunt Here

One of the distinguished delegates at the annual convention of the American Institution of Mining Engineers, held in San Francisco this month, was Capt. Robert W. Hunt, of Chicago, and a past-president of the Association. He is also a past-president of the American Society of Mechanical Engineers, and of the Western Society of Engineers. Captain Hunt's engineering affiliations extend abroad also, as he holds distinguished membership in the Institution of Civil Engineers of England, the Institution of Mechanical Engineers of England and the Iron and Steel Institute of England.

His is the guiding personality in the widely known engineering firm of Robert W. Hunt & Co., whose branch offices and laboratories are scattered throughout the United States, England, Canada, Mexico and South America.

Captain Hunt is universally recognized as one of the world's experts and authorities on steel and its manufacture and uses.

Under his personal direction were manufactured the first commercially rolled steel rails in the United States, and the "Hunt Specifications" for steel rail still remain the basis of all the various accepted rail specifications in America.

It is nearly a quarter of a century since the firm of Robert W. Hunt & Co. was formed, at first for the purpose of testing and inspecting steel rail for the various railroads throughout the United States who found it necessary to have this work done by specialists. The firm still continues in this line of expert work, and nearly every American railway is a patron of this company, which inspects probably 75 per cent of all the rail purchased by these corporations.

In the course of time it became necessary to widen the scope of its operations to include tests and inspections of all forms of manufactured steel and iron, and also stone, cement and other materials.

It now makes a specialty of testing and inspecting all sorts of structural materials, also boilers, pipe, pumps, engines, cars, and machinery of every description.

In its numerous laboratories, one of which is located in San Francisco, facilities of the highest class have been provided for chemical analysis and physical tests of metals, paints, oils, cements, fuels, etc.

Its activities have not been confined to America by any means, and the name of Robert W. Hunt & Co. has come to be as well known in Asia, in Africa, and in Europe, as it is at home.

Pioneer Material Man Dead

Oscar S. Levy, one of San Francisco's pioneer building material men, died September 13th, aged sixty-eight. For the last ten years he was actively engaged in the handling of high-grade building materials, being the sole distributor for large Eastern manufacturers of Keene's cement, damp-proof compounds, etc.

Mr. Levy had the distinction of being the first man in the State, and possibly on the Coast, to make class "A" buildings absolutely fireproof, having been awarded the first contract of the kind by the well-remembered architectural firm of Persy & Hamilton, for installing fireproof trim, doors, sash, etc., on the interior of the Alvinsor Hayward building, now known as the Kohl building, San Francisco.

Mr. Levy also did much for humanity in creating a demand for a more perfect means of protection of human life against fire. He personally superintended the erection of the "Kirker-Bender Fire Escape" on many schools and public buildings throughout the State.

He was a man of high honor and sterling character, and did much for the upbuilding of charitable institutions of the city and country.

Mr. Levy was an ex-Confederate, having enlisted under the "Stars and Bars," with the Tenth Mississippi, in May, 1861, and fought for the cause he thought was right.

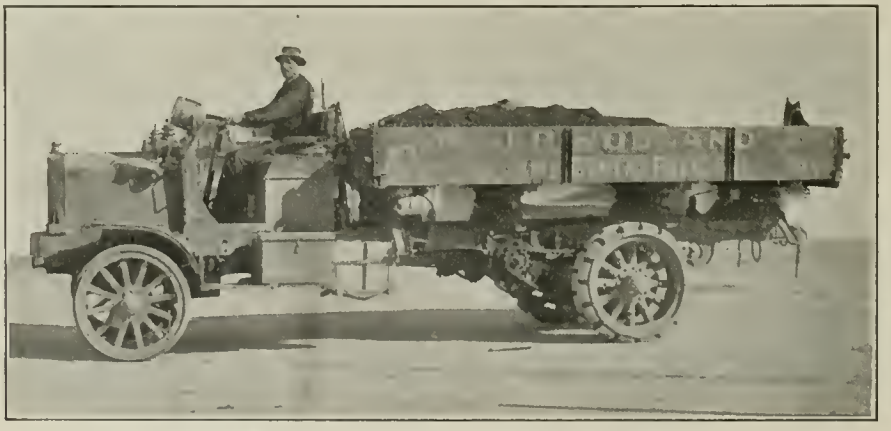
He is succeeded in business by his son, Mr. Robt. S. Levy.

The J. P. Holland Bunkers in San Francisco

An Enterprising Building Material Man

One of San Francisco's most enterprising building material men is J. P. Holland. With the best possible railroad and water facilities, Mr. Holland has added to his equipment of twelve teams, an automobile delivery which leaves Twelfth and Mission streets hourly every week day, carting cement, rock, lime and sand to any point within the city limits in short order. Contractors telephoning orders for immediate delivery will have same taken care of promptly by the Holland motor truck. This is an innovation that doubtless will be followed by many of the other building material firms in San Francisco within the next few months. Suffice to say that Holland is first in the field.

Another important acquisition to the Holland plant is a bunker at Islais and Kentucky streets. The bunker is alongside the Southern Pacific spur track and is kept filled with Niles washed gravel and rock for immediate delivery. Among the large contractors now being supplied are J. J. Leonard, who is building the new Mt. St. Joseph Orphanage, and the big concrete reservoir at the Presidio; Butcher & Hadley, Lange & Bergstrom, and Masow & Morrison. The capacity of the Butchertown bunker is 300 yards. Holland has splendid wharfage facilities embracing over 800 feet of deep water. He has been in business for ten years, and for the past three years he has been handling cement, lime and crushed rock.



First Motor Truck to Carry Building Materials in San Francisco

White Portland Cement

By J. Maxwell Carrere, C. E., General Manager of the Blanc Stainless Cement Company, Allentown, Lehigh County, Pa.

During the past twenty years building operations have increased at a tremendous pace, and Portland cement has become the recognized structural cement. It is the cement of today. It is a grayish —sometimes a bluish, dull material of great structural value for the engineer, the architect, and the builder—but its appearance precludes the possibility of its ever attracting the artist. There is hope, therefore, that the cement of today, the gray Portland cement, will remain the structural factor in the future. But the cement of tomorrow is the white Portland cement.

The white Portland is purely American; for while scientists knew that a white Portland cement could be produced from pure kaolins and pure limestone—and some companies tried it—the cost of such a product was commercially impossible. Practically, I consider it equally unattractive. After years of toil in experimenting—four of which were spent in the present plan—Allentown, Pennsylvania, gave birth to the white Portland cement of commerce.

The history of four years since the white Portland cement was introduced is most interesting, for they were years of distress and panic—years of curtailment of operations—years of economy. They are interesting because of the possibilities created for the gray by the white Portland cement; because of the artistic possibilities in a cement structure of tomorrow, and because of the further artistic education it may create for the welfare of the general public.

Merced to Have New Hotel

The Merced Hotel Company, a corporation organized about a year ago with a capital of $100,000, has purchased six lots at Main street and Huffman avenue, upon which will be erected a modern four-story hotel. Plans are being prepared by Architect Edward T. Foulkes of San Francisco, who designed the new Fresno hotel.

The hotel will have 90 guest rooms, 40 of which will be supplied with baths. The building will contain all modern hotel conveniences, such as elevators, heating plant, room telephones, vacuum cleaning, gas and electric fixtures, etc. The building will be used exclusively for hotel purposes, the ground floor being occupied by offices, lobbies, dining rooms and service rooms. The building will cost $85,000.

Merced people behind the hotel project are R. Shaffer, J. H. Simonson, W. E. Landram, R. Barcroft, J. H. Ellis and S. F. B. Morse. A large amount of stock has been sold in small blocks. Money for the hotel is available now.

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Architect for City Schools

The Los Angeles Board of Education is endeavoring to solve the question as to the best method of securing plans for the new school buildings to be erected under the recent bond issues. The vote of the members stood four to three against establishing their own architectural bureau. While all of the members probably feel that if an architectural department could be established and operated over a period of two years, the method would undoubtedly prove economical and highly satisfactory, there is no assurance that it could be continued for longer than one year, and they feel that the cost of establishing the offices and organizing a working force for so short a time would not be satisfactory or economical. The reports received from the architects asked to submit an estimate on the cost of maintaining an architectural department varied from $15,000 to $45,000 per year. The proposition to appoint a supervising architect received a vote of four to three, but lacked one vote of carrying, as it requires five votes to adopt a resolution of this kind. The sum of $900,000 is to be expended for new school buildings. Of the $560,000 of high school bonds issued, one-half has been sold and the money is available. The board is anxious to get plans for the new buildings started.

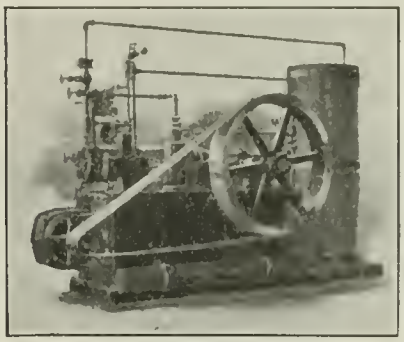
The Board of Education will adopt brick or concrete semi-fireproof construction for all new buildings, frame construction being used only in addition to existing buildings. The plans for all new schools, as well as other city buildings, will be passed on by the Municipal Art Commission.

Southern Pacific to Run Coast Line Trains De Luxe

Modern travel, already luxurious, is to be made even more so by the Southern Pacific Sunset Route. Plans for a new train to run twice weekly between New Orleans and Los Angeles and San Francisco call for a cut of thirty hours in the running time between the two points. The new schedule, with its attendant comforts, has been brought about by the heavy winter travel between the two points on the Sunset Route, and to care for this new equipment is now being built in the Pullman shops at Chicago.

The trains will be all steel. The cars will be of latest design and will contain every comfort now in use on the fastest and best equipped trains, and many new conveniences in addition.

The trains will consist of only six cars, and thus the high speed that will be demanded to make the schedule may be maintained with comparative ease. Each train will carry only a dynamo and baggage car, a diner, three drawing-room sleepers and an observation smoking car.



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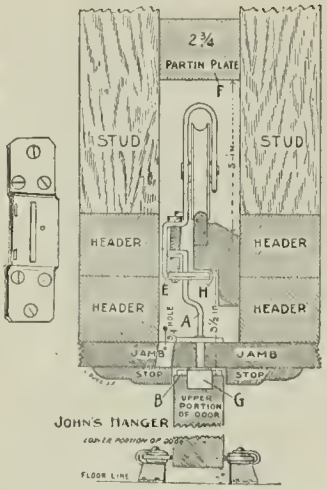

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The men also will be well taken care of, there being a barber, shower bath, arrangements for pressing clothing and a stenographer aboard.

Engineers and Architects Inspect Aqueduct

The members of the Engineers and Architects Association of Los Angeles recently enjoyed an excursion along the line of the Los Angeles aqueduct as far as the Elizabeth Lake tunnel. Fifteen automobiles had been provided for the purpose. The route selected was by way of the Cahuenga Pass, Lankershim, Newhall, Saugus and the San Francisquito canyon. The first stop was made beyond the Newhall tunnel, where the party was shown the large reinforced concrete syphon that crosses the gulch at that point. The next point visited was the Dry canyon reservoir site, where the water will be impounded to break the force of the flow. On arriving at the camp, near the head of the San Francisquito canyon, which was reached shortly after noon, the party was formed into two divisions, those arriving first were taken aboard cars operated by electricity and conveyed through the tunnel to the intake at Elizabeth Lake, where they were given the opportunity of examining the construction of the proposed dam, which will hold the water previous to its entry into the tunnel. The tunnel, which is 26,500 feet long, has an interior dimension of ten feet, a large portion of which has been reinforced with steel ribs, concreted and finished as smooth as a plastered wall. The material used for the concrete is obtained near the outlet or south portal. It is of decomposed granite and is easily quarried. The quarry is a short distance from the crusher and concrete mixer. One yard of concrete, ready to be placed in the mould is made at one mixing. It is then placed in specially constructed cars and conveyed to the point of delivery in the tunnel, where it is unloaded. The facility with which the concrete is handled from the time the material enters the mixer to the time it is in place in the wall of the tunnel, has accounted largely for the success that has followed the work.

California's Mineral Production for 1910

State Mineralogist Aubury has prepared a table showing the total mineral production of the State of California during 1910. The grand total, not including precious metals, was $67,879,789, or a gain over the previous year of more than $6,000,000. The greater part of the gain was due to the following advances in values: Cement from $4,969,437 to $7,485,715; petroleum from $32,398,187 to $37,689,542, and natural gas from $616,932 to $1,646,343.

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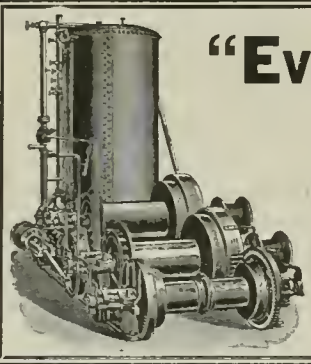

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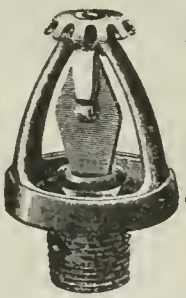

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Philadelphia, Pa., July 10, 1911.

Progress in Fire Protection

We are in receipt of a kind letter from the Rochester (N. Y.) Chambor of Commerce, by its President, Albert B. Eastwood, in which we are assured of the appreciation by that body "of your splendid editorial, entitled, 'Public Rising to Prevent Fires.'" * * * That the "Rochester Chamber of Commerce is by that editorial atimulated to carry on this work aggressively, not promiscuously, for the country at large, but for the results to be obtained within the limits of the City of Rochester.

"If our example will atimulate other communities to like activity, this etupendous fire waste can be somewhat checked."

We reproduce that letter in part as an instance of a popular uprising among the business interests all over the country to reduce our enormous fire losses, losses whith the present year ahows to be largely on the increase.

In connection with this subject we have just received, with the personal compliments of its author, F. W. Fitzpatrick, consulting architect, formerly of United States Service, etc., entitled, "Fire and Firn Losses," a handsome work most carefully prepared for instructive purposes.

Mr. Fitzpatrick says fire is the most dreaded of devastators; "it has been used in war for discharging weapons, and in its crude state, so to speak, as an auxiliary which ranks with carnage and repine.

"In the form of conflagrations, it has supplied some of the most spectacular and memorable and saddest events in history."

Mr. Fitzpatrick very properly puts the weight of his argument for fire prevention upon the fire-resisting construction of buildings.

In connection with that conclusion, which is practically unanimous among those who have made a study of the matter, we recently gave considerable time to an examination of the recent development of using drawn steel in the place of the interior wood work of dwelling and office buildings, and for interior furniture in both classes of buildings, and for interior railway car work.

To be frank about it, we were greatly astonished at the BEAUTY, STYLE AND FINISH OF THIS STEEL INTERIOR WORK, which is now in use aboard steamships for stateroom and other interior work, as well as in the other cases above mentioned.

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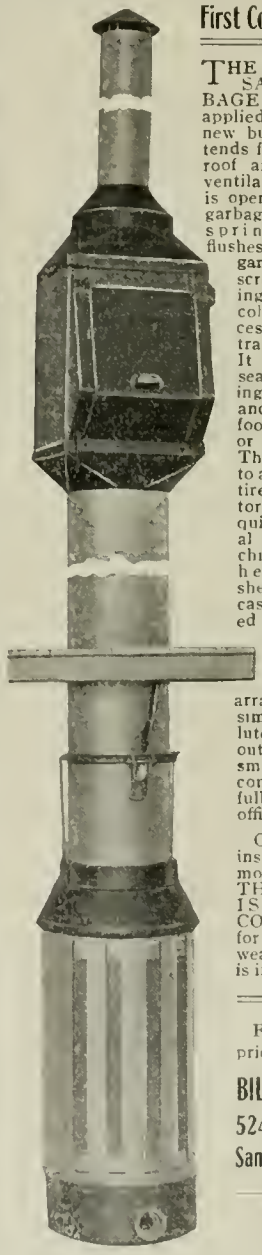

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the suit brought against us by the Marshall & Stearns Company for the infringement of the Jordan Patent, Number 892,668, has been decided in OUR favor. The decision, rendered in this suit on September 19, 1911, holds that the wall beds made by us DO NOT INFRINGE. This decision puts to an end the absurd contentions of the Marshall & Stearns Co. — contentions which we believe have been made for the sole purpose of intimidating purchasers of wall beds and coercing them into buying inferior beds, notwithstanding their desire to purchase wall beds from us.

We believe that such tactics have not appealed to the public. We sell our wall beds on their intrinsic merits. We do not make unfounded charges of infringement in order to make sales. We do not have to threaten our customers with law suits. THEY BUY FROM US BECAUSE THEY WANT THE BEST.

Our wall beds are fully protected by pending applications for U. S. Letters Patent.

Yours truly,

MURPHY MANUFACTURING CO.

919 O'Farrell Street,
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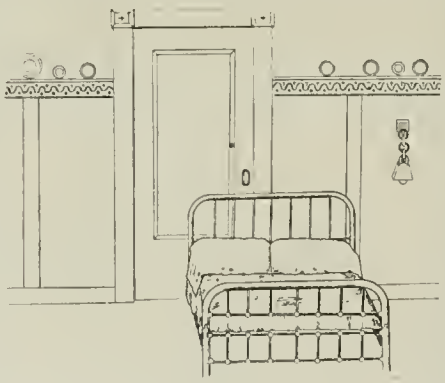
Dated: San Francisco, Sept. 30, 1911

Notwithstanding the fact that during the time this suit was pending all of our customers were harassed and intimidated by threats of suit, we have our beds installed and in use in innumerable buildings in San Francisco, Sacramento and Fresno.



This cut shows a handsomely finished, full sized double bed that can be swung through a door of ordinary width into either of two rooms, or in one room and a sleeping porch at the same time, allowing perfect entrance through the door when the bed is in either position. It is substantially built, perfectly sanitary and the only perfectly concealed bed on the market. If you are building, in justice to yourself see our beds before buying others. Send for circular with measurements.

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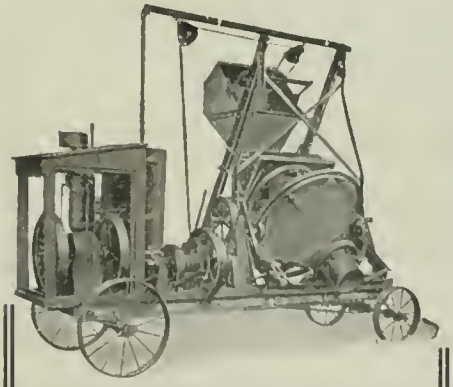

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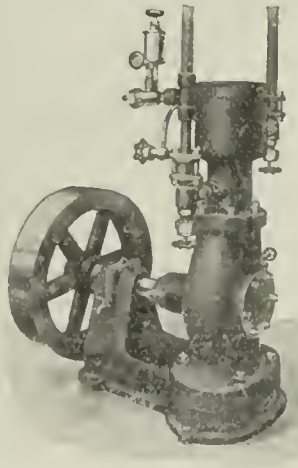

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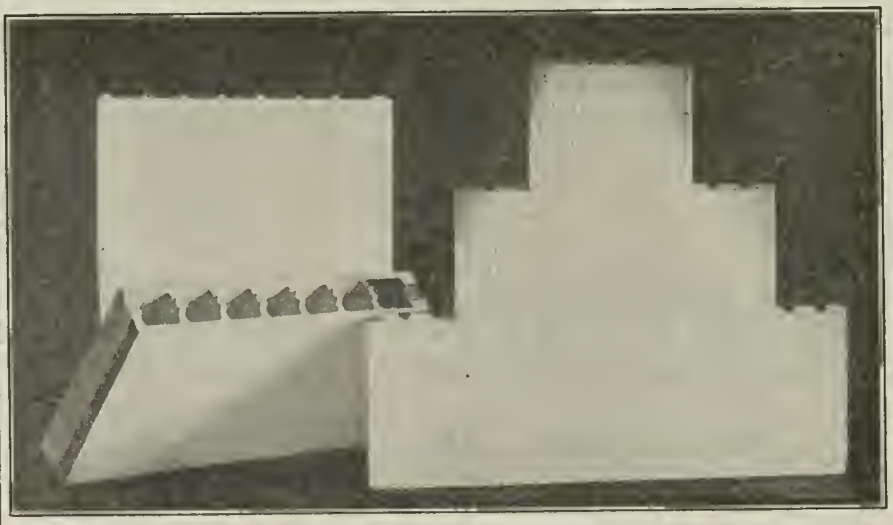

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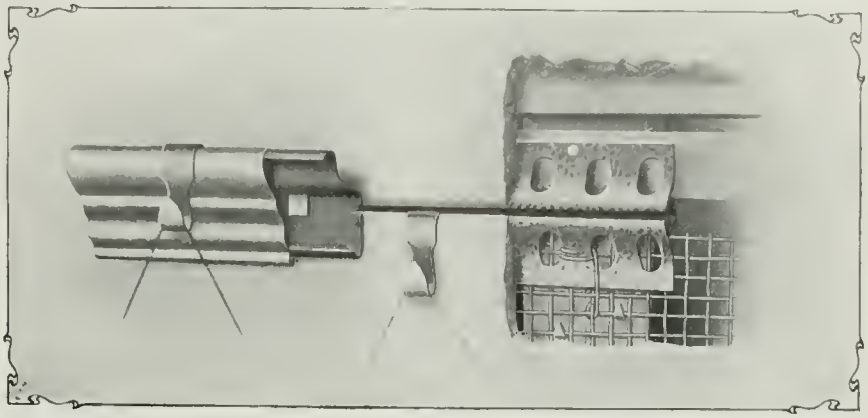
Hannon ORNAMENTAL Metal Picture Moulding (patented)



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Metal Picture Moulding

Showing Bracket inserted into "OUTERSITE" and HANNON METAL PICTURE MOULDING attached thereto

"Outersite"
Plastered

Showing Hook Inserted

[Hook can be placed wherever desired.]

Hannon "Outersite"
Metal Picture Moulding
[An invisible moulding]

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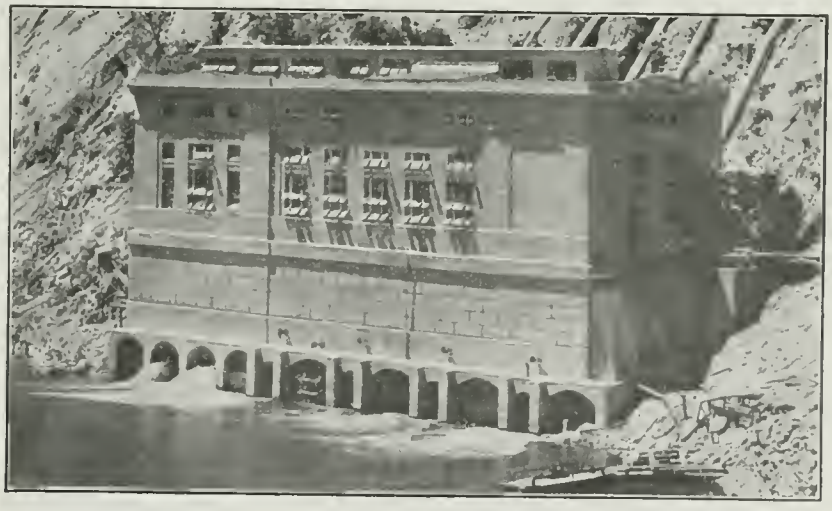

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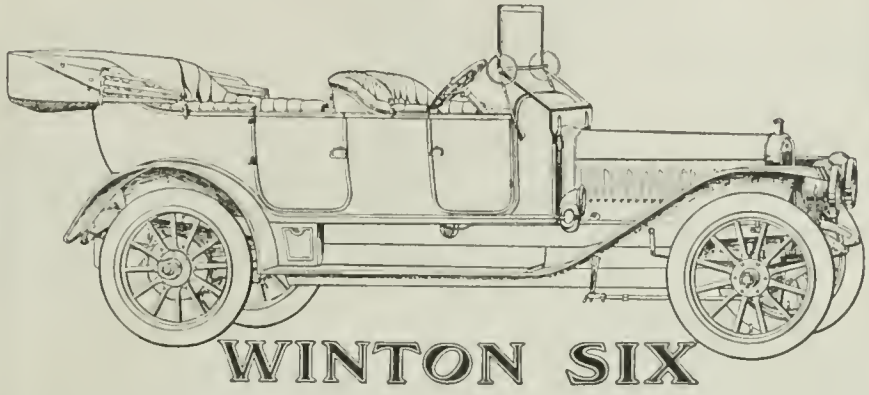

¶ This is the self-cranking Winton Six for 1912.

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First, it halves the *labor*, and consequently the *cost* of cleaning.

The very act of cleaning a room with a broom and duster involves **eight separate** operations: 1. The sweeping itself, which is a slow, laborious task; 2. Moving furniture about; 3. Taking out the rugs and beating them; 4. Gathering the dust together into a dust pan after it has been swept up; 5. Opening the windows during the sweeping process—this means draught all over the house, and in winter, loss of heat which costs money to produce; 6. Dusting over the furniture with a soft cloth or duster; 7. Climbing step-ladders for high dusting; 8. Shutting the windows and bringing the room back to its normal temperature. With "RICHMOND" Vacuum Cleaning, there is but one operation—sweeping. No opening of windows; no wielding brooms; no rug beating; no dust-collecting; no dusting. And "RICHMOND" Cleaning being so thorough, it is not necessary to do the work so often as with a broom.

Second, it puts an end to the annual tear-up called *housecleaning*—and to all of the expense, wear and tear, breakage and depreciation which housecleaning involves.

Housecleaning is a **semi-annual tax** which those without vacuum cleaning must **always pay.** First there is the cost of outside labor brought in; and considerable though this be, it is small when compared to the **damage** loss which housecleaning always means. The carpet which is taken up never looks so well when it is relaid. The furniture which is scuffed and scarred and scratched in moving is permanently lessened in value as well as in beauty. The pictures and mirrors that are broken, as some always are, mean a cash outlay. There is no article of household furniture—nothing in the house from the wall paper to the trim and fixtures that does not suffer a positive money loss at the time of spring and fall housecleaning.

Third, it eliminates the *chief cause* of *all* wear and tear depreciation—*dust, grit and grime;* and doubles or trebles the life of all carpets, rugs, wall-coverings, hangings, upholstery, keeping everything always *bright* and *new*.

The reason why broom-swept carpets and rugs grow worn out and threadbare is that the sand and grit which is tracked over them finds lodgement deep down at the base of the nap. This grit, when examined under the microscope, shows knife-like cutting edges. Walking over the carpet forces the fine nap against these knife-edges and shears it off leaving the bare warp in view. No amount of broom-sweeping can possibly dislodge this cutting grit. Only by the right kind of vacuum cleaning can carpets and rugs be kept free from it. So, not only with floor coverings, but with everything in the house, it will be seen, that dust, grit and grime, more than the wear and tear of use, are the prime causes of depreciation.

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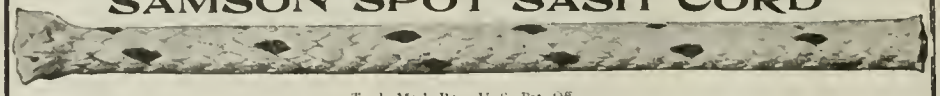

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It plainly describes KAWNEER by means of full sized details and photographs, tells how it is installed, also contains good information about modern Store Fronts in general. Just send for Booklet No. 4. No obligation — we want you to learn more about KAWNEER.

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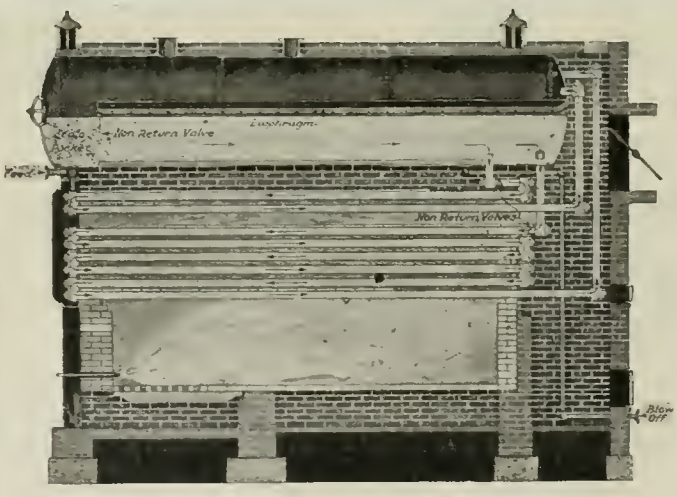

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